

**Guide To
Monetary
Awareness In
Trading:**

Muscas, Fabio

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GUIDE TO MONETARY AWARENESS IN TRADING: MONEY MANAGEMENT

FABIO MUSCAS



M.O.N.E.Y.

M.A.N.A.G.E.M.E.N.T.

In a chapter entitled "The Secrets of Successful Trading" in Street Smarts, Fernando Diaz concluded:

"Successful traders have a larger edge and better money management than unsuccessful traders. Unlike popular belief however, this study shows that the smaller edge of successful traders is not the cause of their failure. Traders' failures can be explained almost exclusively by their poor money management practices."

When trading stocks or commodities the importance of Money Management is underestimated by a lot of traders. It is of much more importance than entry and exit decisions (= timing decisions) will ever be.

Very few indicators are better than a coin toss, and if they are, the edge is eaten up by slippage and commission.

Money Management is also sometimes called asset allocation, position sizing, portfolio heat, portfolio allocation, cash flow management, trade management, capital management, position management, size management, bet size selection, lot size selection, or even risk control, equity control, and damage control.

Money Management is managing the position size while Risk Management is about managing losses and open profits (unrealized trading returns).

Actually I don't like the term 'Money Management' as it also has a very general meaning (it's also used describing the "process" of saving, these "learn valuable skills" pages, talking about piggy banks and how to teach kids about paycheques).

But 'Money Management' tells a trader that (s-)he should concentrate his research on how to optimize capital usage and to view his/her portfolio(-)s as a whole.

Actually there are (at least) 2 steps to implement proper Money Management:

1) Bet sizing is the determination of what (fixed or non-fixed) fraction of a portfolio's total (or again fixed or non-fixed fraction) equity to risk on each trade expressed in Dollar-, Euro-, Yen-, or Swiss Franc-denominated currency values.

2) Position sizing, on the other hand, is the calculation of how many contracts I should hold in my position, once a trade entry is signaled which basically is a function of the BigPointValue (the number of dollars that a 1-point price move represents) and a rounding algorithm as the number of contracts/stocks can't be traded in fractions and must be cut down to a whole integer.

On my desk there are 5 statistics related books and just 2 on trading. So according to the books next to me my focus on statistics is at least 70% :-). A sound knowledge of statistics is a good start into the Money Management arena.

Here a 10 Money Management lessons, including strategies, hints & tips, source code, etc.

They are copied together indiscriminately from several sources from the Internet, from Trading Software, and Trading Literature.

These lessons won't automatically build wealth, but will bring a wealth of experience and knowledge, which will prove invaluable to you if both understood and applied properly. It will steer the course for your success in the global financial marketplace.

I hope you will find and pick what your trading system is desperately looking for.

If you are too lazy to dig deep to both find and understand these lessons I would advise to either refrain from trading or if you are really willing to learn nothing else, then learn this:

Be bright, give up being right, and empha

emphaSIZE on Position SIZE !!! on PositionSIZE !!! Money Management 1

The underlying concept is, that, if we cannot accurately predict our own performance, and as we cannot influence how the

markets will behave, we should at least exercise control over those variables that we have actually control of. And that is the risk that we as traders take when entering a position.

Few, if any, have the ability to view their portfolios as a whole and even fewer are able to optimize capital usage. Traders and investors must move from a defensive or reactive view of risk in which they measure risk to avoid losses, to an offensive or proactive posture in which risks are actively managed for a more efficient use of capital.

NO set of indicator rules will ever make money in futures trading. So forget about fractals, alligator, turtles, waves, cycles, etc.

The best these and ALL other indicators, including Moving averages and Breakouts, will do is make you break-even and at worst blow your account.

The KEY is in your Risk and Money Management.

Combined with sound risk and money management I could even reverse the above statement: "ANY set of indicators rules will make money in futures trading."

Choose a CLEAR, TREND following indicator. One that an 8 year old could tell you whether it is long or short. ONLY trend following indicators will work. If you have to think for more than 1 second whether it is long or short, it isn't clear enough. Stick to 1 indicator in 1 time frame. NEVER pay any money for other people's systems. They will NOT work.

ENTRY: Decide on whether you want to use Reversals or retracements. I recommend reversals.

RISK Management:

Trading only 1 contract at a time will cause you to FAIL !!!

Make sure you are well capitalized. This is not a game for those who are not.

The only way to win at futures trading is for you to be larger (have more positions) when you are right and less positions when you are wrong.

THIS IS THE KEY TO TRADING.

Maintaining the same number of contracts for each trade will cause you to FAIL. Varying contract size is the MOST important thing you must do, if you want to be successful.

Buying and Selling using the same number of contracts will at best, lead you nowhere and at worst, wipe you out in the long run. You can vary your positions with the following:

1) Stagger out of your trades when wrong (Phantom of the Pits points out that you should let the market prove you correct instead of letting it prove you wrong by hitting your stop loss). The market goes against your entry (!!!). BUT hold on to all your positions when right. 2) Make sure your profit goal is larger than your stop loss point.

MONEY Management:

Never let a winner become a loser. Adjust your stops as the market moves with you. TREND: Use trend following indicators only. I recommend Moving average 2 lines and Break outs. -----> Pick the shortest time frame with the longest trend indicator.

Principles of Money Management:

While Risk management dealt mainly with maximizing profits using contract size, Money management deals mainly with minimizing losses using stops, as well as showing you when to take profits. They are both very closely intertwined with each other. You cannot have all risk rules but no money management rules, and vice versa. I gave you Rule #1 which says to stagger your stop losses, and here is ONE very important principle that you have to learn in Money management:

80% of your Profits will come from 20% of your trades (Pareto Principle). What do I mean by that? Let's say we are playing the game of 50/50. So 50% of our trades will be losers. There is no way avoiding it and we will attempt to keep those losses small by staggering our stops with multiple contracts.

The other 50% are NOT all going to be big winners. Out of that 50%, roughly half will be where you really make your money and the rest will pay for your losses. It is similar to running a business. 80% of your clients will pay your costs for running the business and 20% will be the reason you are in business.

Why is that? You will have trades where you are right initially but they will come back and become only small winners. This is okay, you will never be able to predict the exact perfect exit for a trade, but you can see where the problem is. If you don't capitalize on that 20% of trades where the price just keeps on going in your direction, you will end up just covering your losses

and you will not get anywhere.

Here is an example:

100 trades

50 trades are immediate losers but kept small using stops

30 trades are moderate winners

20 trades are big winners

50 losing trades x average of 4 points = 200 points

30 winning trades x average of 8 points = 240 points

20 winning trades x average of 20 points = 400 points

Net Result: 440 points

So if we did not hold out for those 20 points on each of those winning trades, we would probably just break even after paying commissions, and we are definitely not going through all this hardship to make the broker rich, right?

So while rule #1 dealt with cutting losses, rule #2 will deal with when to Exit ... with a PROFIT! This is usually the most difficult of the rules to quantify. Getting into a position is elementary. Exiting for a loss, expected. But when do you take your profits?

For a trader this can be very difficult. You have entered your position, sat there while the market was ticking back and forth, and now finally it is showing a small profit.

The natural tendency will be to take it. Will you be right? Sure, sometimes you will catch the top before it retraces, but when you get into a habit of doing that, you will miss the big trenders and you will curse and stomp around and there is nothing you can do except pray it stops and do you know what? It won't and you will miss it all. Truly a sad tale, but luckily there are many more trends where they came from, so don't worry.

Alright, let's get back to our example. The market is ticking, and is now showing a small profit. Here is where the true test of your nerve will be played out. Where all those other traders are going to try to scare you out of your position, so they can get in. Will you know when? No, of course not. No one knows how long a position will go in one direction.

This is where position size again plays a crucial role. What will happen if you enter with only one position? Well, when you exit, that's it. You will now have to wait for another trade.

And if you try to hold out for the big trade, you will have a lot

more losers or breakeven trades.

With multiple contracts, you have many more options. First, have a profit objective that is larger than your stop loss points. It is important that it is larger. You can see why in the example above.

This is where you will exit some of your positions for profit. Now with the use of trailing stops, you are going to sit back and try to go catch a big move. You will never know when it will happen, but it is critical that you are there when it happens.

So before we continue, here is Rule #2.

RULE #2

STAY with ALL your positions until they meet the minimum profit objective.

Exit a portion of your trade at the minimum profit objective. Hold the rest using a trailing stop to take advantage of huge trenders.

Use a breakeven stop to never let a winner become a loser.

The markets are going to try to scare you out of your positions. DON'T LET THEM!! This is when you are right and you CAN'T AFFORD to not capitalize on this. If you get out early, even if you made a small profit, IT IS A LOSS!!!

Fear and greed are emotions felt when you don't have specific rules in place. Follow your rules, and the only way to have confidence in them is to test them. So let us break down all the Money Management principles from the point of entry:

STOP LOSS

[clickforlargerimage](#)

You have entered a trade with 4 contracts (green arrow). You immediately enter your stop loss orders (red lines) IN the market. We do that because the market will go to where it will go, with or without you. Keeping the stops in your head will not help you if the market starts racing against you.

We have followed rule #1 and staggered our stops as you can see with the red lines, now we wait....

Scenario #1

[clickforlargerimage](#)

Oh well, the market went against you and took out some or all of your stops. If it took out all your stops, as it did in this example, forget about it and wait for the next trade. If it took out only a couple and then went in your favour then great, continue the lesson

BREAK EVEN STOPS(Scenario #2)

clickforlargerimage

Ok, the market has gone up in our favour, though not quite at our profit objective (blue line). You will get the urge to exit here, but don't. That is your fear talking, saying that the position will reverse.

What we will do now however, is remove all the STOP LOSS orders and place a STOP that will give us a break even situation if the market comes back. We will calculate that to be our entry plus 1, and is shown by the red line.

Scenario #1

clickforlargerimage

Well you can't win them all. The market retraced and took out your break even stops. If the market is very volatile and you really want to get back into this position then fine, re-enter. I recommend that you wait for your next entry, however

PROFIT OBJECTIVE (Scenario #2)

Hmmm...what do you know? We have a winner on our hands. The market has reached our profit objective. We will exit 2 of our 4 contracts, here.

clickforlargerimage There is no specific rule as to how many you should exit at this point. Some may exit more to cover previous losses. Some may exit less to try to capitalize greater. Use your experience and judgement based on the previous trades. For example, if there hasn't been a trend in a long time, then you might want to hold onto 3 contracts, because eventually one will happen. This is as opposed to a situation that just finished with a huge trend. This is a guideline only. I have seen major trending days go on for weeks, so use your best judgement.

Also, I recommend that you have your profit stop in the market, waiting for the objective to get hit. This way it forces you to stick to

your plan and is more likely to get executed.

Also, it would a smart idea to move that break even stop on those 2 contracts, higher. If the market retraces, you will still make good money on those contracts. In this case I put it just above where the market was stalling as it found some resistance.

Scenario #1

clickforlargerimage

Now you are still holding 2 contracts, but the market has run out of steam and retraced and has taken out your break even stops. No problem. You still made some money and you didn't lose on your winners.

TRAILING STOPS(Scenario #2)

clickforlargerimage

Time to come to papa! The remaining 2 stops are now showing some serious profit, and we will have our trailing stop (as seen in blue) right there to catch it in case the market reverses.

Where to place that trailing stop? Here are some ideas:

The first should be put just above your 1st profit objective. Then the market may reverse slightly. If it continues in your favour, put the stop just below that retracement. Any retracement that holds is a good place.

Now if based on your research, you have seen that huge moves like this are usually x ticks, and we have now made that size move, there is nothing wrong with taking profits here, before the market retraces. In fact I would recommend it, but just don't jump the gun at any move. You can also remove 1 more contract here and hold out the last on the trailing stop or wait for the close.

There are countless possibilities and no "perfect" way. The main goal is if it is going your way, do everything you can to be part of the action.

Many successful money managers trade systems that do take the same trades without trying to measure 'market environment'. The size of the trade is determined by the money management parameters which again are systemized rules. They do not

change from trade to trade. One could also build rules to react differently to different 'market environments'. That would be part of the system. System or mechanical trading is not limited to anything but a set of rules that govern each and every trading decision. These rules are decided before hand.

This example also assumes that one has a system that provides a market edge. This also assumes that the trader has the ability to correctly follow the system. Both of these are large assumptions. A system will have winning trades and losing trades, but the winning trades either from their number or their size, will make up for the losers and leave a profit. From this scenario the trader **MUST** trade the exact same way for every trade/environment. He/she has an edge. If the edge is used the same way every time over a large enough set, a profit will be made. The trader acts as the **HOUSE** in a casino. The edge works for him. You apply the edge the same way over and over. While you know certain market action will produce losing trades, you also know that the winning trades will overcome that. You do **NOT** want your judgment getting in the way. If someone was paying you 7-5 every time you correctly guessed heads but only 4-5 every time you correctly guessed tails, you would not sit out flips or throw in some tails guesses. You would sit and guess heads until you had all the money you wanted. IF you can correctly determine 'market environment', then you should work that into your system.

Most good systems have fewer than three parameters, filters etc. They are very simple which adds to their 'robustness'.

Scot Billington

- emotions can be managed but not controlled
- view each trade merely one in a series of probabilities
- know why you take a trade and what must happen for you to remain in it (!!!). If it fails to happen - get out even if your stop has not been triggered.
- You cannot have one without the other. It is not the 'system' (and I despise that word when it comes to trading) that makes the trader, it is the trader that makes the 'system'.
- important: the ability to trade **WITHOUT** a **BIAS** or **OPINION** as to market direction (**NO EGO**), and realize that there is no such thing as

overbought/oversold, and no price is too high to buy or too low

to sell. You also need to learn to like your losses as they just put you one step closer to a winning Trade(s) and are nothing more than the cost of doing business.

- I take the same trades each day, but how I manage each trade is dependent upon my read of the environment (discretion). You cannot trade

the exact same size and exit the exact same way for every trade/environment. For example, a trending market requires a different approach than a range bound market. In the end it boils down to your ability to read the PRICE action and adopt your game plan to the current conditions - AND THEN EXECUTE. And all you 1-lot traders out there better re-think your approach as trading 1-lots is a fool's game (***!!!***). You are far better off trading 3 ES/NQ than you are trading 1 SP/ND. I'll make the same challenge to the 1-lot traders that my mentor made to me when I was a 1-lot trader - I'll trade 3 NQ/ES to your 1 ND/SP and we'll see who wins. I took him up on that and he cleaned my clock... I have not traded 1-lots since and never will again.

Trading is all about management - yourself, your money, your attitude and your position. It is NOT

about predictions, forecasts or OPINIONS. You cannot learn how to drive a car without being behind the wheel - and you can't learn how to trade by just reading a book, attending a class or buying a 'system'. Bob Heisler bheisler@swbell.net <http://www.rjhtrading.com>

System trading is only good if the computer automatically enters the orders, the stops and the exits. If not, if the individual decides to not take a trade the system is flawed. I only know of one person that is set up this way. He uses a break out system and it produces approximately 37% winning trades. His profit picture is about a 22% annualized return. I did not see his sheets or look at his numbers. But the computers do put in all the trades. Any system where an individual trader puts in the order is discretionary to a degree. The party that says he is trading totally system may be using the system as a crutch to blame for the losing trades.

The system I use is 80% mechanical and 20% discretionary. If I lose it is my mistake, the system has a 20% losing factor, but I have to look at it as my error. I am not blaming myself for the lose, I am saying that the lose is part of the system. I developed the system, therefore the lose is mine. If I did everything the system said to do, and took every trade the system gave me, then I could blame the system if my percentage of winners to losers changes. If my profit per trade goes down, or if the graph of my profits has lower highs and lower lows, I look for a problem, not in the system, but in me. If you did what the

system said and you lost money, it was still a good trade. It is good only because you had the discipline to follow the system. Did you bother to analyze the trade after the close to see why the trade lost? Was there something that you didn't see? Was it something that you over looked? With me, I usually find that I got lazy and didn't do my homework. I assumed that because I was successful that I was bullet proof. Not so. No one is bullet proof. Self, ego, and the psychological need to be right are the discretionary traders worst nightmare. The other problem is ones belief system. Taking everything into consideration, I still believe that the human brain is the best computer ever developed. The thing that people forget is that the brain sees in pictures and not in numbers. The first thing most traders want to know is to were do I get in and how much will I make. This is overbought or oversold. Volume is up or volume is down. They start seeing numbers and figuring. They start back testing, they start using indicators that they don't understand. They look at the past rather then the future. Wrong, look at the picture and it will tell you the whole story. Like a road map.

A good trader can take almost any system, astro, volume, eliot, Gann, even some of Larry Williams stuff and make a good living. He does it because outside of the system he is looking at the chart and that picture is what triggers his final decision. Like everything in life, you have to visualize what you want to accomplish before you can get there. Trading is a business. You need a plan for everyday that will take care of the contingencies that might arise. With the proper planning there are very few surprises. You won't get rich over night, but you will be able to get there. Many have done it. Ira.

Learn to trade the leading edge of the market, by following the price action. Furthermore, it means only using the very liquid markets with a daily range and movement that is consistent with their ability to withstand drawdowns that their account will allow. Not easy!

Now, clever people with sophisticated computer programs and all the other factors necessary to trade a system, with all its implications, have to have a bank account or other people's money of sufficient size to trade. Most on this list are individual traders who don't have the money or systems. If they cannot trade with discretion, they cannot trade at all.

Therefore, it follows that effective means of day trading is for the little guy and systems, indicators et al, are for those who, shall we say, live to play, rather than play to live.

Bill Eykyn www.t-bondtrader.com

- Which money management strategy best fits your risk profile? In general terms, the more stable your equity curve, the more aggressive you can be in your money management strategy. It should come as no surprise to those who have studied Optimal f , that it can be aggressive in its position size. Therefore, to properly implement this strategy it should be applied to systems with very stable trading results. Systems with Sharp Ratios above 2, Return Retracement Ratios above 8 and K-ratios above 2.5, will (in general terms) satisfy our stable trading condition. Now in real world trading it is very rare that systems will generate these results. To help focus on the appropriate money management strategies that will fit most trading systems, consider the least aggressive strategy before moving onto the most aggressive strategy. In general terms begin with the Fixed Fractional and Secure f strategies before moving onto Diluted f and the ultra aggressive Optimal f money management strategy. This will save you a great deal of time and effort when testing some of the more popular money management strategies.

Trading Metaphor:

Trading is like driving. Where you want to go etc., the "how much do you want to make" metaphor, depends on me. How fast do I want to go? Well, how much risk do I want to take, e.g., tickets, accidents, etc., or in trading, how quickly do I want to achieve my goals. How much wear on my car (me and everyone around me) do I want to incur? I could wear my breaks and tires out by starting and stopping at every stop light - i.e., entering the market by choosing too tight of stops or exits. What if I never get where I'm going? Have I prepared a road map (trading plan) with check points.

A low risk idea is an idea with a positive expectancy that is traded in such a way to allow for the worst possible conditions in the short run so that you can achieve the long term expectancy.

Q:
Percent Risk Model (using e.g. 2.0% of you capital for position sizing): if a trade moves in your favor you add additional contracts in different or the same markets?

A:
You might simply decide to keep a constant risk. In that case, you

adjust your stop according to your system and peel off (= reduce) contracts when the risk got above the level you wanted to maintain.

Q:
Which is "better" mathematically, a 20% chance of winning a dollar or a 10% chance of winning two? In each case the expectancy is 20 cents but they are clearly not the same. - Why are they not the same?

A:
Question including full background:
In an interview in Stocks & Commodities you described a simple position size game (60% win, 40% loss and expectancy 1.2). The expectancy is $0.6 \cdot 1 - 0.4 \cdot 1 = 0.2$ or 20 cents per dollar risked. I immediately started trying to derive the optimal bet size. In consultation with my colleagues we broke the problem up a little, derived some intermediate goals and came away with a few results:
1. The first problem was to define "optimal". We decided that optimal meant "highest risk / reward ratio". Well "reward" was obvious but...
2. So the second problem was "define risk". Do you define risk as the probability that a certain outcome will occur or do you define risk as the variance of possible outcomes aka standard deviation or do you use something different again? We found this problem intractable and decided to approach from a different angle.
3. There must be some kind of function which will define optimal betsize - but what are the independent variables? We assumed that the system would have to work regardless of how much money was involved so the betsize couldn't be fixed, it had to be some sort of percentage. Secondly it couldn't only be based on the expectancy of the underlying system. Consider the following two games:
A game with a 50% chance of a 3:1 win and a 50% chance of a 1:1 loss has an expectancy of $0.5 \cdot 4 + 0.5 \cdot 0 = 2$
No, the expectancy is $0.5 \cdot 3 - 0.5 \cdot 1 = 1.50$ or \$1.50 per dollar risked.
A game with a 100% chance of a 1:1 win and 0% chance of a loss has an expectancy of $1 \cdot 2 = 2$
No, the expectancy is $1.0 \cdot 1 - 0 = \$1.0$
Same expectancy but vastly different optimal betsizes.
In each of those cases the Kelly criterion defines the optimal bet size-- (i.e., for maximum return only).
We were back to being stumped but at least now we could clearly state the core problem: Which is "better" mathematically, a 20% chance of winning a dollar or a 10% chance of winning two? In each case the expectancy is 20 cents but they are clearly not the same. How

would you define "better"?

Here your opportunity factor would make the key difference. If you only had one chance, I'd want the 20% opportunity. If you have unlimited chances and there was no cost to playing, it wouldn't make any difference unless you like more rewards in which case you'd still want the 20% opportunity.

We are currently refining some software that will answer the question of optimal bet size for you and help you determine what optimal means for you. It will be included with a new money management report that we are planning to offer soon.

Q:

Suppose you have a \$10,000 account and wish to trade using volatility. Using an example similar to Van's book, say you want to purchase a \$50 stock with an ATR of \$4. You elect to set a stop at 3x volatility and you will risk 2% or \$200.00. If I understand your logic, this means you could only purchase $200/12$ or 16 shares and stay within the guidelines. Now here is my real question. If you set the stop at 3x volatility, but find statistically that Van is correct, and on average you stop out at 1.5x volatility, then could you increase your risk to 4% and achieve the same results. Somehow this seems mathematically equivalent, but logically I think the overall risk increases.

A:

Volatility has nothing to do with the stop. If the ATR is \$4 and your 2% allocation is \$200, then you would purchase 50 shares. If you are using a 2% risk allocation (i.e., \$200), and your stop is a three times volatility stop, then you would purchase 16 shares. Risk and volatility are not the same thing for position sizing allocations. Since that is the case, your logic is wrong. You would probably only use a volatility allocation when you were using a very tight stop like a dollar. In that case, you would buy 200 shares, so a 2% volatility allocation of \$50 is safer.

In a nutshell, volatility position sizing is totally independent of your stop. You keep your same stop, you just size your positions based upon volatility.

If you are using stock data, then I wouldn't recommend a volatility stop. I'd trail a 45 day moving average.

You have stated that a good money management plan should involve risking a percentage of total equity and that the volatility should also be a percentage of total equity. How would one measure volatility so that it is a percentage of total equity?

Answer:

You would measure volatility according to a 10 day exponential moving average of the ATR. Let's say that's \$3.00. Thus, for 100 shares of stock it is \$300. If you have \$100,000 and wanted to trade a 1% volatility algorithm, you could expose \$1000 to volatility. Since volatility is \$300 per hundred shares, you could have 333 shares.

80% - 90% of traders lose - 10%-20% are consistent winners.

Van Tharp:

3 MM algorithms (Minimum will be taken):

1) 1% of core capital:

a) $(\text{core capital} - \text{Total outstanding risk}) \times 0.01 = x$

b) $x / \$ \text{ value of initial stop} = \text{Nr. Contracts I}$

2) new risk limited (total risk $\leq$ 25% of equity): before execution:

$\text{equity} \times 25\% - \text{total risk} = y$

if $y > 0$, $y / \$ \text{ value of initial stop} = \text{Nr. Contracts II}$

3) ongoing volatility (10 day M.A. of ATR): max 2% of equity

My initial stop I place very close sometimes to close but statistically it works and I always limit my losses to very small amounts when I am wrong. My initial stop is placed 1 tick below the previous days low. As the stock goes up I move my stops up to continually protect my profit. I will loosen my stops some as the stock moves so as not to get stopped out by general fluctuations, but I generally keep stops within 10 - 15% of where the stock closes.

!!! Use expectancy + know what it means to be wrong ten times in a row in a good system !!!

Trading Program/Software is difficult because most vendors cater to the model of predicting the market and they give people what they want.

Market Wizard System -- here's a candidate

Mark Johnson

mjohnson@netcom17.netcom.com 1997/04/21

misc.invest.futures

Here's my test results of a Market Wizard System. It is profitable, averaging a compound growth rate of 65% per year for twelve years (net gain 420X in 12 years). It traded an initial stake of \$100K and ran the equity up to \$42 million after twelve years.

The system is found on page 60 of LeBeau and Lucas's book, Computer Analysis of the Futures Market. Unfortunately that means the system is unacceptable to Andrew St. John Goodwin, the originator of this news thread. Ah well, he no doubt has accumulated better systems anyway. Still, this one might perhaps be useful for "diversification across a number of different systems," which itself is a Market Wizard principle.

A few details about my tests:

- * I used commissions = \$50 per contract per round trip
- * I used slippage = 4 ticks per contract per round trip (for example in the Deutschemark, 1 tick = \$12.50 so the commissions + slippage in DM is \$100.00/contract)

- * I tested from 01 January 1985 to 18 April 1997 (last Friday)
- * I tested the system on the 25 markets that I myself happen to trade in my own real-money futures account. These are the markets for which I always have continuous, up-to-date data files ready for testing:

BP C CD CL CT DM DX ED FY

HG HO HU JO JY KC LB MB MP

NG SB SF TB TU TY US

- * I used a Market Wizard "money management" rule: always risk exactly 2.6% of total (closed + open) account equity on every trade.

- * I used the software package "Trading Recipes" by RW Systems to perform the tests

- * I started the historical test account at \$100K. You may dispute whether this is too much (or too little) to start simultaneously trading 25 futures markets. But that's what I did.

File: LEBEAU.GO Date: 21 Apr 97

----- Performance Summary -----

Net Win Loss 42,053,156 Capital Required 36,143

Percent Wins 41.6% Date of Requirement 850404

Trades, Trades Rejected 1427 0

Wins 594 153.3M Total Slpg + Commssn 24,733,183

Losses 833 111.2M Start Up Capital 100,000

Long Wins 346 94,867,737 Margin Calls, Max 0 0

Long Losses 427 52,638,274 Max Items Held 13,617 970404 Short

Wins 248 58,478,932 Days Winning, Losing 1630 1424 Short Losses

406 58,655,237 Expectation, Kelly 22.1% 11.4% Max Consecutive

Wins 8 15,950 Comp. Anul. ROI, ROI 65.0% 42053.2% Max

Consecutive Losses 14 9,202,127

Largest Winning Trade 5,325,899 Start Date, End Date 850326

970418 Largest Losing Trade 1,183,200 Total Items Traded 217623

Average Winning Trade 258,159 MAR Ratio 1.38

Average Losing Trade 133,606 New Highs, Percent 269 8.8% Avg
\$Win to Avg \$Loss 1.93
Max Drawdown by %, \$ 46.95% \$15.76M % on 891101 \$ on 960304
Longest Drawdown 1.39 years 950707 to 961125

Here's the "equity curve". For brevity I've only included 6 equity readings per year; this keeps the message length manageably small. There's nothing sinister here; I'm just "saving bandwidth" as the Usenet expression goes.

850201 100000.00
850401 97830.15
850603 114061.95
850801 128820.94
851001 138293.08
851202 169813.23
860203 216806.97
860401 288582.59
860602 285737.25
860801 254516.64
861001 230563.89
861201 243111.95
870803 471144.72
871001 498039.31
871201 678973.75
880201 755799.69
880401 714359.19
880601 688729.88
880801 1067212.50
881003 1039365.00
881201 1201548.50
890201 1363686.00
890403 1484712.38
890601 1684390.50
890801 1887812.75
891002 1256556.75
891201 1103038.00
900201 1820179.38
900402 1966021.63
900601 1868241.38
900801 2269144.75
901001 3050966.25
901203 3390288.25
910201 2887254.25
910401 2751789.75

910603 2450820.50
910801 2247085.50
911001 3246755.00
911202 4257608.50
920203 6582033.00
920401 5058539.50
920601 5094387.50
920803 8523964.00
921001 10232035.00
921201 8946255.00
930201 8634425.00
930401 10871372.00
930601 10686823.00
930802 11951045.00
931001 11933584.00
931201 10493555.00
940201 10365359.00
940401 11514206.00
940601 12596234.00
940801 17350238.00
941003 14743892.00
941201 17446028.00
950201 15582884.00
951201 25886892.00
960201 27243478.00
960401 27255586.00
960603 31130510.00
960801 29642532.00
961001 27338004.00
961202 37941076.00
970203 36292488.00
970401 43538832.00
970418 42153156.00

In article ubchi2@aol.com (UBCHI2) writes:

> I am a professional hedge fund trader looking for some new >
technical systems. If you know the rules of a Wizard system, > email
a description and statistical summary of results. If it > checks out, I
will make you a cash offer on it. If you need > privacy, just leave a
phone number or email for mine. > Publicly available systems not
acceptable.

> --Please no day of week, volatility expansion, channel breakout, >
oscillator, bar chart pattern or other common methodologies. > Only
a totally mechanical method will be purchased. > Andrew St. John

Goodwin

Re: Turtle Trading Seminars Mark Johnson
mjohanson@netcom17.netcom.com 1995/08/09
misc.invest.futures

In article kskaggs@pinn.net (Ken Skaggs) writes: # I just received a direct mail peice telling me that # for \$2500 I can learn from one of the Turtles, Russell # Sands. With all the usual caveats, like why is a successful # Tutle going public, does anyone know anything about # this seminar?

> Subject: Simulation of the Turtle system (Re: What's the best system?) > Date: Fri, 14 Apr 1995 18:12:14 GMT
> Here's a copy of an email I placed on the omega mailing list > in November 1994.
> Despite Dave Chamness's provocative subject line
> "What's the best system", I don't mean to state, imply, or > suggest that the Turtle system is in any way "best". It's
> a system, a long term trend following system. That's all. > >
> > A while back I used Omega Research's System Writer Plus > > (abbreviated SWP) to analyze the Turtle System as > > propounded and sold by Russell Sands, one of the original > > "Turtles" trained by R. Dennis and W. Eckhardt. See > > the book Market Wizards by Schwager for more of the > > Turtle story if you're interested in the history.
> > Anyway, because of limitations in the System Writer > > Plus software, I deviated from Russell's teaching in two > > ways that might be important.
> > 1. Russell adds more contracts onto trades that show > > a profit, under control of a table of what-to-do > > contingency instructions created by Richard Dennis. > > (Adding more contracts onto existing positions > > is called "pyramiding".) SWP doesn't do > > pyramiding, so I left it out. In Russell's terms, > > I always traded "single, 1N units".
> >
> > 2. Russell provides a specific formula for determining > > how many contracts to trade (one aspect of "money > > management") which is a function of the equity level > > in your account on the day you initiate the trade. > > I didn't do that. I made constant-size bets
> > throughout the year, and I only adjusted my betsize > > once

per year, on December 31, based on the equity > > in the account on that day. I found it a whole lot > > easier to program SWP this way; it's difficult to > > continuously compute the total equity in an account > > that's trading multiple commodities simultaneously. > > Difficult in SWP, that is.

> >

> > With those two deviations, I programmed up the Turtle > > System in SWP. I used system parameters found > > on the diskette that Russell provides (Initiation > > parameter = 40, Liquidation parameter = 15). I ran a > > SWP historical simulation of ten years of trading, from > > 3/31/84 to 3/31/94. (I was using Omega's "20 year" > > historical data package, which stops at 3/31/94. They > > promise an update Real Soon Now :-)

> >

> > I charged myself an outrageously high \$125 per round > > trip trade, PER CONTRACT, for commission and slippage. > > Even at full commission brokerage houses, commission > > per contract drops quite low when you trade more than > > one contract at a time. Still, I felt that if the

> > system could show a profit under these difficult testing > > conditions, it would be a very good sign.

> >

> > I ran the simulation on eight commodity markets. > > Russell's data indicates the Turtle System is weak

> > in the grains and the meats, so I left them out.

> > The markets I used were

> > Crude Oil

> > Japanese Yen

> > Coffee (Note that the monster coffee

> > Deutsche Mark trend of 1994 took place AFTER

> > Orange Juice 3/31/94 and so was not included

> > Swiss Franc in the simulated trading)

> > 30 Year T Bonds

> > British Pound

> >

> > I staked myself to 100 grand and started the historical > > simulation of trading. What were the results? Here's > > the yearly equity statement:

> >

> > DATE TOTAL EQUITY OPEN TRADES CLOSED TRADES > >

> > 03/31/84 100000.00 0.00 100000.00

> > 12/31/84 151390.00 25990.00 125400.00

> > 12/31/85 414672.50 200176.25 214496.25

> > 12/31/86 542322.50 143495.00 450117.50

> > 12/31/87 1320185.00 422156.25 898028.75
> > 12/30/88 1882528.75 202292.50 1680236.25
> > 12/29/89 2608198.75 646685.00 1961513.75
> > 12/31/90 5127685.00 -35650.00 5163335.00
> > 12/31/91 8101231.25 2370407.50 5730823.75
> > 12/31/92 10941421.25 166010.00 10775411.25
> > 12/31/93 14214740.00 1428970.00 12785770.00
> > 03/31/94 12901833.75 0.00 12901833.75

> >

> > The worst drawdown period in percentage terms was December
> > 1990 through August 1991, when total equity dropped from >
> > \$5,712,182.50 to \$3,953,901.25. (A decline of 31%). > > There
was also a decline of 24% from July 1993 to February > > 1994. In
the ten year period I simulated, the system made > > a total of 500
trades. (6 trades per year in each

> > market). The winning percentage was 40%: 198 winning > >
trades, 302 losing. Overall, I was pretty pleased with > > the results.
> >

> In what is probably a futile attempt, I will _try_ to answer the >
two most commonly asked questions here, in the naive hope it > may
reduce the number of repeated replies/followups: >

> Q1. Tell me the trading rules of the Turtle system.

> A1. Buy them from the vendor. He advertises in Futures > magazine
and Technical Analysis of Stocks and Commodities > magazine.

>

> Q2. Why didn't you compute Statistic X? If you had a brain > you
would know that Statistic X is vitally crucial for > a proper scientific
evaluation of a trading system. > Your failure to include Statistic X
means either that > you're hiding something, or you're a nitwit, or
both. >

> A2. I typed in what System Writer Plus prints out; there's > no
intent to deceive or mislead. I'll be glad to email > you the sequence
of trades and the equity stream from > the SWP simulation so that
YOU can compute Statistic X. > Best regards, Mark Johnson

HERE IS: Source code for Option Pricing, binomial model

Mark Johnson

mjohnson@netcom17.netcom.com 1995/05/20

misc.invest.technical, misc.invest.futures

Here's the Binomial model, used to compute options prices for both
American and European style expirations. You can test and cross-

check the answers by comparing the program's prices for European options, with a Black-Scholes subroutine.

You get what you pay for. You paid zero for this code. Think about it.

-----BEGIN-----BEGIN-----BEGIN-----BEGIN-----BEGIN-----

```
#include
```

```
#include
```

```
void option_val(x, k, r, v, dx, days, n, european, cval, pval, cd, pd)
```

```
double x ; /* current index price */
```

```
double k ; /* option strike price */
```

```
double r ; /* annual T-bill interest rate */
```

```
/* NOTE: r
```

```
double v ; /* annual volatility; 0 < v
```

```
double dx ; /* dividends (fraction); 0 < dx
```

```
int days ; /* how many days to expiration */
```

```
int n ; /* how many iterations of the algorithm */
```

```
int european ; /* if 1 then European, otherwise American */ double
```

```
*cval, *pval ; /* call value, put value */
```

```
double *cd, *pd ; /* call delta, put delta */
```

```
{
```

```
double s[200] ;
```

```
double c[200] ; double p[200] ;
```

```
double doubl_n ;
```

```
double nd ;
```

```
double time, tn ;
```

```
double divt, div ;
```

```
double v0, r0 ;
```

```
double u, d, du, ur, a ; double q1, q2 ;
```

```
double rkm, pdm ; double y, t0 ;
```

```
int i ;
```

```
if(x <= 0.0) fprintf(stderr, "Hey bozo, index price must be > 0, not  
%.4f\n", x); if(k <= 0.0) fprintf(stderr, "Hey bozo, strike price must  
be > 0, not %.4f\n", k); if((r <= 0.0) || (r >= 0.25))
```

```
fprintf(stderr, "suspicious interest rate %.4f\n", r);
```

```
if((v <= 0.0) || (v >= 0.5))
```

```
fprintf(stderr, "suspicious volatility %.4f\n", v);
```

```
if((dx < 0.0) || (dx >= 0.3))
```

```
fprintf(stderr, "suspicious fractional dividend %.4f\n", dx);
```

```
if(days <= 0) fprintf(stderr, "Hey bozo, days must be > 0, not %4d  
\n", days); if((n <= 0) || (n > 195))
```

```
fprintf(stderr, "suspicious number of iterations %4d\n", n);
```

```
doubl_n = (double) n ;  
nd = (double) days ;  
time = nd / 365.00 ;  
tn = time / doubl_n ;  
divt = 1.0 - (dx * time) ;  
div = 1.0 / pow(divt, (1.0/doubl_n)) ; v0 = v * sqrt(tn) ;  
r0 = 1.0 + (tn * log(1.0 + r)) ; u = exp( (r0 - 1.0) + v0 ) ;  
d = exp( (r0 - 1.0) - v0 ) ;  
du = d / u ;  
ur = 1.0 / u ;  
a = (r0 - d) / (u - d) ;  
q1 = a / r0 ;  
q2 = (1.0 - a) / r0 ;
```

```
/* set expiration values for index, call, and put */ s[n] = x * pow(u,  
doubl_n) * divt ;  
for(i=n; i >= 0; i--)  
{  
a = s[i] - k ;  
c[i] = 0.0 ;  
if(c[i] < a) c[i] = a ;  
p[i] = 0.0 ;  
if(p[i] < (0.0 - a)) p[i] = 0.0 - a ; if(i > 0) s[i-1] = s[i] * du ; }
```

```
/* initialize values for present value of dividend */ y = dx / time ;  
t0 = 0.0 ;  
rkm = 1.0 ;  
pdm = 1.0 ;
```

```
/* do n iterations of the model */  
while(n >= 1)  
{  
if((dx = 0.0) || (european == 1)) goto do_iteration; /* adjust for  
dividend payment */  
for(i=0; i <= n; i++)  
{  
s[i] = s[i] * div ;  
a = s[i] - k ;  
if(c[i] < a) c[i] = a ;  
a = (k * rkm) - (s[i] * pdm) ;  
if(p[i] < a) p[i] = a ;  
}  
/* compute new present value of dividend */ t0 = t0 + tn ;
```

```

rkm = 1.0 - pow((1.0 + r), t0) ;
pdm = 1.0 - (y * t0);

```

```

do_iteration:

```

```

for(i=0; i <= (n-1); i++)

```

```

{
c[i] = (q1 * c[i+1]) + (q2 * c[i]) ; p[i] = (q1 * p[i+1]) + (q2 *
p[i]) ; s[i] = s[i+1] * ur ;

```

```

if(european != 1)

```

```

{
a = s[i] - k ;
if(c[i] < a) c[i] = a ;
a = (k * rkm) - (s[i] * pdm) ;
if(p[i] < a) p[i] = a;
}
}

```

```

/* if n=2, use values to compute deltas */ if(n == 2) {

```

```

a = x * (u - d);
*cd = (c[1] - c[0])/a ;
*pd = (p[1] - p[0])/a ;
}

```

```

n--;
} /* next n */

```

```

*cval = c[0] ; *pval = p[0] ;
}

```

```

/* a little stub to test out the options valuation subroutine */ main()

```

```

{
int n, number_of_iterations ;
double number_of_days ;
int days ;
double dx, dividend_dollars_through_expiration ; double v,
index_annual_percent_volatility ;
double x, current_index_price ;
double r, interest_rate ;
double k, option_strike_price ;
int european ;
double cd, pd, cval, pval ;

```

```

number_of_iterations = 50 ;
number_of_days = 95.0 ;
current_index_price = 351.25 ;
index_annual_percent_volatility = 0.16 ;
dividend_dollars_through_expiration = 3.00 ; interest_rate = 0.075 ;

```

```
option_strike_price = 345.00 ;  
european = 0;
```

```
n = number_of_iterations ;  
days = (int) number_of_days ; /* (expiration_date - today) */ dx =  
dividend_dollars_through_expiration / current_index_price ; v =  
index_annual_percent_volatility ;  
x = current_index_price ;  
r = interest_rate ;  
k = option_strike_price ;
```

```
option_val(x, k, r, v, dx, days, n, european, &cval, &pval, &cd, &pd) ;  
printf(" Call Value %11.4f Call Delta %11.4f\n", cval, cd); printf(" Put  
Value %11.4f Put Delta %11.4f\n", pval, pd); }
```

Money Management 2

Ray Barros:

THE ROLE OF MONEY MANAGEMENT

Introduction

I have noticed that in newsgroups and trading magazines, the emphasis is on trading systems and/or approaches. On the other hand, theoretical works tend to emphasize the primacy of money management.

For example, in a chapter entitled "The Secrets of Successful Trading" in Street Smarts, Fernando Diaz concluded:

"Successful traders have a larger edge and better money management than unsuccessful traders. Unlike popular belief however, this study shows that the smaller edge of successful traders is not the cause of their failure. Traders' failures can be explained almost exclusively by their poor money management practices."

While I agree with this statement in principle, I am certain a trader's plan must give him an edge. Good money management will not save a plan without an edge; all it will result in is slower ruin. In "Anatomy of a Trade", I indicated the elements I believe are essential to giving a trader his edge.

In this article, I want to outline the best money management approach I have encountered.

W Gallagher's method set out in "Winner Take All".

Gallagher's Money Management

This section will be divided into three parts:

- 1) disagreement over % stops**
- 2) the pillars of the approach**
- 3) a spreadsheet formula for the approach**

Fixed % Stops

Gallagher argues that "risk to trading equity cannot be reduced by reducing the amount risked on each trade".

Let's illustrate this by way of an example Gallagher uses in his book.

Traders A and B both have \$20,000.00 and both want to take a trade in Soybeans that may net them

\$4,000.00 per contract. Both decide to trade 1 contract.

Trader A decides to risk \$5,000.00 and Trader B \$400.00. Trader A thinks his trade has a risk reward ratio of

1:4; trader B, 1:10.

Gallagher argues that the risk /reward for both traders is exactly the same because "the strategy risking

\$400.00 can be expected to be stopped out two and one-half times as often as the strategy risking \$1,00.00".

To quote Gallagher:

"You can drive from Toronto to Miami in one day, or you can spread the drive over three days; it still takes the same amount of gas to get there. The small amounts risked with very tight stops will be balanced by the high frequency of occurrence of losing trades."

For me this is true only if you believe the market is random and/or your stop placement is a money stop rather than a technical stop. On the other hand, if you believe, like I do, that the market has a structure, then stops can be placed at levels which if hit indicate the trend has changed.

As an example, in "Anatomy of a Trade", I set a stop for the A\$ at 7782 because if the market got to that level, the trend would change from up to down in my time frame.

If my belief is right , you first determine your stop and then see if

the dollar value from entry is within your risks parameters. If not, you skip the trade. Given my trading results, I am happy to risk 2% to 5% of capital. Each trader has to set his boundaries. These boundaries are determined by a trader's profitability profile, ie

- * his historical run of outs,
- * percentage of wins: percentage of losses,
- * average \$ win: average \$ loss etc,

and his psychological tolerance to loss. Here I'll mention one factor. I have had the opportunity to observe many traders over the years. On average I would say that at the 20% drawdown mark, most traders start to lose it - their discipline starts to go, they start to look for new methods etc. So as a general rule, set your boundaries for a maximum loss of 20% and you won't go too far wrong.

To conclude this section.

Unlike Gallagher, I believe a maximum % loss has a part to play in keeping a trader from blowing out.

Having said that, maximum % loss is not the only criteria. There will be times when the unusual event will occur (and in trading, it seems to happen all too often!)

To protect against the rare occurrence, the key element is exposure. And it is here that Gallagher comes into his own.

The Pillars of the Approach

By exposure Gallagher means the dollar amount needed to cover each open position.

Risk to equity increases with exposure and with time. To adopt Gallagher's approach a trader has to decide for how long he wants to trade and the maximum draw down he would expect to experience in the period. Gallagher postulated as a result of his trading experience, a 25 % probability of a 50% draw down in ten years.

The next step is to calculate objectively the largest equity drop (LEED).

"Once LEED is determined, the trader can then make a logical decision on how he wishes to finance this

LEED. He can be aggressive, or he can be conservative - as long as he is aware of the risks he is running."

To work out the LEED, first work out the average daily range (rather average true range) over the period of the results under consideration;

then work out the \$ value of your trading results in terms of the daily range. This gives you a result in units.

(example: let's say the average range of D-Mark is 40 points and you make 120. The win result is 3).

Once this is done, you can calculate two things:

1) a probability distribution of your method (ie your edge quantitatively determined) and

2) the LEED

Let's look at an example for the LEED

Trade Gain/loss (in units) Cumulative Equity LEED

1 -1 -1 1

2 -1 -2 2

3 0 -2 2

4 2 0 2

5 3 3 2

6 -1 2 2

7 6 8 2

8 -5 3 5

You get the idea.

Gallagher takes the view that most methods with a 10% edge need 40 units to finance one contract of anything.

Gallagher calls this the "R" factor.

He also found that LEED is a function of the square root of the trading time and therefore a function of the square root of the number of the independent positions being taken.

Once you have worked out the "R" factor you can work out the dollar value of any contract.

As an example, at the time of Gallagher was writing, the US Bonds had an average daily range of 24 points for a dollar value of \$750.00

If we assume Gallagher's desire not to exceed 50% draw down over 10 years of trading and a 10% edge, we will have a 40R requirement.

To finance the US Bonds:

Number of Positions Amount Required

1 \$ 30,000.00

2 \$ 21,000.00

3 \$15,000.00

Note that as the number

The Formula

Col A: The instrument you are trading.

Col B: The probability of drawdown over your trading life . I have adopted Gallagher 's 25%.

Col C: The number of independent positions.

Col D: Col B/Col C

Col E: The dollar value of daily mean range

Col F: The "R" value. Notice that Gallagher worked out that for his method he needed

40R, I require

20R. You may require more or less "R"s.

Col G: Square Root of Col D x Col F

Col H: 1st line ; in the example above Row 8 , original capital / Col 6;

thereafter Col J in previous row / Col G; in the above example, J8/G9.

Col I: The actual number of positions taken.

Col J: 1st line: original capital minus (Col I x Col G)

thereafter previous Col J minus (Col I x Col G).

Note in the example above the amount required if the A\$ is part of two other independent positions is

A\$16,500.00; whereas if it is traded alone, the amount required is A\$28,500.00.

Conclusion

In this article, I have suggested that risk to equity can managed by two factors:

a) technical stops that do not exceed a fixed percentage of the trader's equity and

b) the Gallagher formula for exposure.

Both depend on the trader's personality, profitability profile and the volatility of the market.

Dated 1st day of July 1996

R Barros

ANATOMY OF A TRADE

My aim here article is to give an example of the principles I outlined previously. I shall be considering the a\$/US as at July 3rd 1996.

Trend Analysis

In any trading plan, the first requirement some means of identifying of trend of the timeframe we are trading (I call this, a "trader's timeframe"). For reasons outlined previously, this implies:

- a) we have some means of identifying moves of similar magnitude, and
- b) we have some means of identifying changes in the trend of trader's timeframe.

I would also add that the trader's timeframe's trend may be influenced by the trend of the next higher timeframe.

To determine trends, I use swing charts and a wave theory of my own (R-Wave). The latter is based on categorising corrective waves to define moves of similar magnitude,

On July 3rd 1996, the quarterly trend had just given a confirmed change in trend to the upside (no chart shown). As long as the a\$ did not accept below 7795 before breaking above 8045, I was happy that the quarterly uptrend was intact.

Chart 1 shows that the monthly swing chart had just given a confirmed breakout to the upside. As with the quarterly, I wanted to see a lack of acceptance below 7705.

Chart 2 shows that wave (1) had completed and wave (2) should terminate between 7890-7920 with the mean at 7807 being the most probable termination point,

At the end of the trend analysis, I had come to the following conclusions:

- 1) The trader's timeframe (monthly) was up. Acceptance below 7705 would change this view.
- 2) A preliminary support zone for wave (2) termination was 7694 - 7920, with the mean retracement at 7807.

Given what I said in (1) above about 7705, the range for (2) was 7705 - 7920.

Once we have determined the trend, we have our strategy. We now need a low risk entry.

Low Risk Entry

The next step in the trading plan is to identify a low risk entry zone. I look at three factors.

1) Some area which is likely to mark the end of the corrective move. The tools I use here are Dynamic Gann Levels and Steidlmayer Distribution zones.

For DGL's, level 2 support came in at 7807, the same number as the R- Wave mean. The Distribution buy zone came in at 7841 - 7812 (See Chart 3).

2) Once a zone is determined, you need something (a chart pattern or principle) to tell you that the zone has held - what I call a setup.

In this case, the bar of July 3rd was a Wyckoff "spring" - also known in Distribution terms as a 313 outside - The market dipped below the previous low at 7812 and was unable to go on with the down move.

These patterns were examples of the principle of "effort vs. result". The strong move down of on the July 2nd should have led to some further losses. None were forthcoming as at the close of trading on July 3rd 1996.

3) After a setup, I need an entry technique. For me that came on July 4th when the 90 mins chart (not shown) produced a confirmed change in trend.

Stops were below 7782 and made up as follows:

$7806 - (8045 - 7806) * 10\% = 7782$

Once in the market, we have to manage the trade. Let's look at that now.

Trade Management

Normally I would wait for the market to enter the 8045 - 8014 zone before taking 1/3

or 1/2 my positions out, However on Friday July 5th (see chart 4), we had a range of 1048 points!

The mean daily range for the a\$ at present is 45 points with a standard deviation of 15. That means that the 145 point range had less than a 1% chance of occurring. Even allowing for statistical error, Friday's range was excessive.

Given that range, I pulled 1/2 my positions out once the 90 mins showed that the up move had stalled. The point is, I am not sure

if Friday's move is a sign of strength or if like a rubber band stretched too far, there is a strong down move to come.

As it stands, I can now bring up the stops on the remaining position to

7788 made up as follows:

$7806 - (7980 - 7806) * 10\% = 7788$.

This gives me a "free run" for this trade ie even if stopped out, I make a few dollars.

If the market moves into the 8045 - 8014 zone, partial positions would be liquidated and stops moved up.

So there we have it an anatomy of a trade.

A Final Comment

I have come across many traders who "just want the secret" to make money.

In a sense there is no "secret". Traders who make money do so because they have a trading plan with an edge that incorporates effective money management. They then have the discipline to execute it relatively flawlessly and the self esteem to accept the money the market gives them.

Then again may be that is the "secret".

Happy and profitable trading!

Sigma of mean return declines over time Sigma of total return rises over time

I realize if I had started trading in March last year I would have been blown out, so will only increase position size when I can limit risk to 2% per trade.

...ask is touched on a buy stop or when the bid is touched on a sell stop.

often exit positions long before I am stopped out !!!

I executed long trades at 1,785.

Target for my second third was 1,891 - 1,866

First resistance was at 1,843 - 1,832

I exited the first third at the low 1,830's. Not only did that zone represent resistance, it was also the area that allowed me to break even on the remaining 2/3s if stopped out.

I was wrong about this week's direction and took out the second third in the high 1,800's. If I was wrong about the week's

direction, it was probable I was wrong about the mkt getting to the 18910 zone.

The stop on the remaining 1/3 has been raised so that if I am stopped out, I should lose no more than 50 points (allowing for slippage) on the last 3rd.

Preservation of capital and consistent profitability is most important. As Steidlmayer used to say "trading is 10 months of grind and 2 months of gravy. If you can stay ahead in the 10 months of grind (or least lose very little), the 2 months of gravy will make you a very successful trader".

With any system, you can "over filter" either it is by adding seasonal considerations or just too many filters. The trick is when adding filters one must be sure that the filters do not contradict each other. When this happens you have created your own version of chaos.

ATR D-Mark its about 40 ticks

Set a stop at 3 ATRs under the entry, reversing when it hits the stop. Then adding an additional contract to when the stop is moved up another ATR. This assumes that you can get out reliably with simple stop orders. Thats not always the case, especially when multiple contracts are pyramided up. The money management step, adding on the contracts with each movement of the stop and then adding positions with "the markets money" is what makes the money. The real money is not made with the usual 1 to 3 strike moves in this system. Its in the pyramiding that can take place after a position becomes riskless. If it goes on past the 3 or 4 strikes and another similar position is added, it then only takes a 2 strike move to become riskless again. You have twice as many positions working. Then another pair of futures and options are then added, using the equity from the previous positions requiring only a 1 strike move to become riskless. It doesn't take much of a trend to gather 64 or 128 contracts/options to become "ballistic" and still not have any additional risk to your account using "the markets money" to pay the way. It just takes getting over trying to be "right" all of the time and letting the market take you where it wants to go. When the move is over, you just start over again in the opposite direction with the 3% risk again - hopefully.

chi squared test: indicate that the improvements are unlikely to be random.

Look at the momentum of what is happening. If volatility and momentum go to a certain level and get way out of line, I'm looking for a reaction in the other direction and then I put on a trade.

search via e-mail?

-----Ray Barros:

You are right. Money Management attempts to answer these questions:

- * how much to allocate as initial deposit
- * how much to risk per trade
- * how to allocate among competing opportunities. * number of contracts to be traded.

> I tried to increase position size according to the %return on > margin (the higher it grows the higher the number of contracts), when > %return on margin calms down, I decrease position size, but the results > are not very satisfactory.

> I also tried to increase/decrease position size according to the > dependency among the last x trading days of a trade. When there is a > Win-Lose-Win-Lose pattern I increase-decrease-increase-decrease, when > there is a Win-Win-Win-Win pattern I increase continuously (e.g. every 5th > day). Also not very satisfactory. Am I on the right track but on the wrong branch?

I am not a believer in increasing/decreasing the size of my capital a matter of course (= selbstverständlich). My reasoning is thus:

"If a have a 65% probability of winning on a trade, the probability does change because you have had a run of outs or wins."

I have simple rules about increasing the size of my capital. Whenever I achieve a 30% increase, my capital base increase by 15%.

Example: I start out with \$100,000.00. When I have made \$30,000.00, my capital base increases to \$115,000.00. When I have made \$35,000, (a rounded 30% of \$115,000.00) my capital base increases to \$132,000. You will note that I round up for the requirement of 30% increase and round down for the capital base increase.

If I increase my bank by 15% and I suffer losses gives back all of the 15%, I return to the original bank.

Example: I increase by %15,000 to \$115,000.00 and losses of \$16,000.00 accrue, my bank drops to \$100,000.00 for money management purposes.

The best books I have come across on the subject in increasing order of importance on my ideas on Money Management:

* Gallacher "Winner Take All". There is a chapter on MM which is better than any book.

I take issue with (anderer Meinung sein) Gallacher's attitude to 2% on a technical and psychological issue rather than mathematical. However that is because I am a discretionary trader - his argument is directed to the mechanical trader.

If you read his book and want to take the discussion further, please write.

* Balsara's "Money Management Strategies for Futures Traders". Poses good questions but the answers are inadequate.

* Gehm's "Commodity Market Money Management". Good book for introducing the probability issue. That title is probably out of print. However Gehm did have a re-write 2/3yrs ago with a new title but I cannot recall its name.

regards

ray

RANKING OF TRENDS

In "Anatomy of a Trade", I said that identifying the trend of the timeframe you are trading is important because it sets up the strategy for your trade. In other words, in an uptrend, you buy dips or upside breakouts, in a downtrend, you sell rallies and downside breakouts and in a sideways trend, sell the top end of the range and buy the bottom end.

It is almost a cliché that "trends are where traders make their money". However, I believe that you need to go beyond merely identifying a trending market. To maximise my profits, I would rank the type of trending market I am in.

For the purposes of these notes, I am assuming a monthly uptrend. The monthly is therefore the "trader's timeframe trend".

Moves in the direction of the trend (ie up moves), I shall be calling "impulse moves" or "impulsive" and moves in a direction opposite to the trend (ie down moves), I shall be calling "corrective moves" or "corrections".

This article will suggest four categories. They are ranked from "0" to "3", with "0" being the most difficult to make money and "3" being the easiest provided you can identify it.

The key to the categories is the relationship between the impulse and corrective waves by the amount that one overlaps the other.
Ranking "0"

Characteristics

1 Corrections of the impulse move tend to be between $> 67\%$ to $< 87.5\%$.

2 Breakouts are followed by a correction between $> 67\%$ to $< 87.5\%$ and a deep re-entry (ie greater than 50%) into the previous correction.

eg After the breakout at "3", the market retraces between $> 67\%$ to $< 87.5\%$ of "2" to "3" and greater than 50% of "1" to "2".

3 At either Point 5 or point 7, the trend or trend type will change. In other words, the market will either change from an uptrend to a downtrend or at Point 5 or point 7 change to a Ranking of 1 or 2 or 3

Profit Potential

Unless you identify it, it is difficult to make money in this type of trend.

Breakout traders have to wear the pain of the retracement. Most will place their stops below the 50% or 67% retracement areas and will continually get stopped out.

Responsive buyers

ie buyers on dips

will probably not get set.

Responsive sellers at the top end of the ranges will make some money if they take partial stops or use some form of trade management. Otherwise, they also will be stopped out continually.

Ranking "1" Characteristics

1 Corrections of the impulse move tend to be between $> 33\%$ to $< 67\%$.

2 Breakouts are followed by a correction between $> 33\%$ to $< 67\%$ and a shallow re-entry (ie 50% or less) into the previous correction.

eg After the breakout at "3", the market retraces between $> 33\%$ to $< 67\%$ of "2" to "3" and 50% or less of "1" to "2".

Profit Potential

Profit potential is reasonable.

The danger points are the correction following the breakout when re-entry occurs below the point of breakout. Good trade management is necessary.

Ranking "2"

Characteristics

1 Corrections of the impulse move tend to be between $> 33\%$ to 50%.

2 Breakouts are followed by a correction between $> 33\%$ to 50% and no re-entry into the previous correction.

eg After the breakout at "3", the market retraces between $> 33\%$ to 50% of "2" to "3" and above "1".

Profit Potential

Profit potential is excellent as this is the most orderly of all the trends. When the market retraces into the previous correction's range, you will KNOW that a CIT is imminent.

Ranking "3"

Characteristics

1 Strong (in terms of price and time) directional move after a confirmed CIT on breakout above "1".

2 No corrective moves.

Profit Potential

Profit potential is poor unless identified early or you have developed special rules to deal with it. This type of trend can prove very frustrating for the responsive trader as the market

steams ahead without any corrections.

Breakout traders can make excellent money as the market quickly turns poor trade location into fine ones.

Novice traders learn extremely dangerous habits as they "learn" that the market will get them out of trouble as long as they trade with the trend and "isn't easy to identify a trend that will go on forever" (??!!)

There you have a method of ranking trends. In my next article, I shall look at some examples.

Happy trading 27/08/96

RANKING OF TRENDS

PART II

In the first part of this article, I outlined the concept of "ranking of trends".

Here I shall look at a practical application reviewing the current US/Jy picture. The trader's timeframe is the monthly trend.

In the above chart, the monthly trend has been up with a ranking of "0". In the previous article I said,

"3 At either Point 5 or point 7, the trend or trend type will change. In other words, the market will either change from an uptrend to a downtrend or at Point 5 or point 7 change to a Ranking of 1 or 2 or 3."

The question now is:

"Will the US dollar accelerate its uptrend or will we see a deep correction to at least 10335 and probably below?"

The quarterly trend shows the US/JY still in a downtrend and currently in a sell zone. Even if we are to have a change in the quarterly trend from down to up, we can expect to have a test of the low at 8010. Generally the market will retrace to the 50% level around 9700 - 8965.

Given the quarterly picture, the probability is the monthly trend

will break to the downside.

Identifying the actual setup and entry is beyond the scope of this example - the point of which was to illustrate the use of "ranking of trends".

October 7, 1996

Wyckoff, Steidlmayer and my own observations on how markets behave. Let me introduce myself. My name is Ramon Barros. I have been a professional trader since 1980.

I trade the forex markets, and interest rate futures, Australian Ten Year Bonds, US 30 Years, the Gilts and Bunds.

What follows are the basis of my trading approach.

My approach to the markets is a combination of Wyckoff, Steidlmayer and my own observations on how markets behave.

Here I would like to set out the principles that govern my trading so that you have a basis to follow my line of thought in future articles.

Wyckoff:

He was the first that I know of that drew the distinction between mechanical TA and subjective TA.

The grandfather of the former is Schabacher. He studied charts looking for patterns that led to the same result. In modern lexicon, the Edwards and Mcgee formations, head and shoulders etc. Here the approach is observations of models and then finding as many carbon copies as possible.

With subjective TA, we begin with a set of principles. The observation is aimed at finding these principles at work and responding to them in the appropriate manner.

"At this point there may be the inclination to say, "What is the difference"?

There is a very basic difference. A formation is a constant. If the

stock does not fit one of the molds.....it is eliminated.

A principle is more than a constant. It is an absolute. In the case of the market, it is a statement of condition that is unequivocally true. Given a certain set of conditions, the result will always be the same. These conditions may not and usually do not, produce carbon copy formations."

Introduction to the Wyckoff Method of Stock Market Analysis

Wyckoff articulated three laws:

The Law of Supply and Demand:

Market go up when demand exceeds supply and vice versa. He also identified that "in between the excess of supply and demand, or demand over supply, is a state in which the two are in equilibrium"

COMMENTS: All of the above should be self evident. However many trading systems/approaches recognise only two trends:

up or down

It's the reason you get such huge drawdowns in non trending markets.

The Law of Cause and Effect

The effect realised by a cause will be in direct proportion to that cause. To get an important move (effect), there must be an important cause ie these moves take time to develop.

The Law of Effort and Result

What is important is not only price but also the character of the volume. When volume and price are in harmony, the trend is likely to continue. When they are out of sync, positions are in danger and defensive measures need to be taken.

For example, in the US Bonds. We have had a down move which began on or about February 13th 1996. From the 11th April lows onwards we see the market make new lows only to retrace back into the previous congestion area.

On June 12th, we see a beak of the closing low of the past six weeks.

The volume was above its mean (in fact it was close to its mean plus 1 Standard Deviation); the range was below its mean and the net change was a mere thirteen ticks.

Given the disharmony, I would tighten stops on long term shorts and liquidate any fresh positions taken on the break of the six week closing low.

Wyckoff did develop a model for identifying how markets moved, terminated its trends and the appropriate trading strategies. However, the model was secondary to the principles and a way of illustrating their use.

Before we leave Wyckoff, I need to mention one other item.

Wyckoff believed that markets moved in waves as a trend progressed. The magnitude of the action in time and price determined the nature of the underlying trend.

Given the above, it is critical to his approach we determine the trend of the timeframe we are trading. The tool he used was a trend channel. What is important is not the tool but the manner in which it is constructed.

"(In an uptrend)...The next step is to construct a justifiable trend channel (emphasis added)...The important word here is justifiable.

An uptrend channel is formed from a support line and an overbought line....To define a support line requires two points....they are to be low points of two consecutive reactions of similar importance (emphasis added)..."

Introduction to the Wyckoff Method of Stock Market Analysis

The idea here is to measure moves of similar magnitude. I shall have more to say later on this subject later on.

For now I would like to leave Wyckoff and turn to Steidlmayer. Steidlmayer

Peter J Steidlmayer , floor trader and former director of the CBOT is known of his work on the Market Profile and its subsequent evolution, the Steidlmayer Distribution.

Much of Wyckoff's ideas are found in his work. As Steidlmayer has never acknowledged

Wyckoff's influence, I would say that he made his observations independently of Wyckoff. I make this point to stress that two traders, centuries apart, have made similar observations about market behaviour.

Like Wyckoff, Steidlmayer believes that principles rather than models are the key to trading success. His key message is that trading is no different to any other business endeavour and that the common management techniques used in other business endeavours are applicable to trading and investing.

My Own Work

Most of my own research lies in identifying what constitutes moves of similar importance. I believe that one of the key failures of modern technical analysis is a failure to answer this question. To determine the nature of the current trend, we first have to determine, the magnitude of that trend by some relatively objective means. One of the problems with the Elliot Wave is subjective nature of the various wave classes.

For me, there are two ways of measuring moves similar moves - by time or price.

In the case of time, swing charts are easy to apply. In my own trading I use the 12 week to determine the quarterly trend, the 18 - 20 day to determine the monthly, the 5 day to determine the weekly and an intra day swing chart to determine the daily.

In the case of price - what was important to me was the magnitude of the corrective move. For this reason I classified all the corrective moves for each market and worked out the mean and standard deviation for each. In this way, I know when one category ends and another begins.

Well that's it. In the future, we'll look at the specifics and their implementation.

Money Management 3

Date: Sat, 14 Dec 96 11:24:06 PST
From: ramon@world.net
Subject: Re: Tuition and Education
To: dgl@vnet.net

=====

On Fri, 13 Dec 1996 04:04:17 -0500 (EST) Carl wrote:

> I WANT and NEED 'HELP' in my trading decisions!!!

>

> I've "BEEN THERE and DONE THAT" but always, my way-NO
DISCIPLINE!!!, seat > of the pants kind of stuff-----what a rush, a
30,000 + day, and then watch > the 'screen' in > a sort of trance
for a 90,000 ---(minus) day!

(of course, day > trade, NO stops, > until my order taker asked for
it)

=====

Hi Carl,

Here are some suggestions and hope they can at least point you
in the right direction.

I believe the transition from "mug trader" to "consistent
profitability" needs the learning of three lessons.

1 thinking in terms of probabilities. Ultimately, this needs the
development of a trading plan (including a money management
plan).

2 executing that plan as flawlessly as possible and

3 accepting the profits the markets gives a trader as a reward for
his efforts.

The first lesson is firstly technical ie acquisition of the relevant
knowledge and secondly psychological ie application of the
knowledge. The other two lessons are mainly psychological.

Generally I have found that most novice traders fail to have a
plan; in other words they fail at the first gate. To have discipline
means to "execute your plan flawlessly"; if you don't have a plan,
then how can you expect to have discipline?

So what must a trading plan contain?

*** Identification of the timeframe you are trading:**

This means you have some means of measuring moves of a like magnitude and identifying the trend of that timeframe: up, down or sideways.

It also means you have some means of identifying changes in trend. Once you have identified the trend and answered the question "continuation or change", you have established your strategy.

in uptrends: buy

in down: sell

in congestion: buy the bottom end of congestion and sell the top end or just stand aside until a trend resumes.

Once you have your strategy, then you need to establish * low risk entry

+ + To do this, you need to have some means of establishing support or resistance areas where the market is likely to stall eg

- you're in an uptrend, a correction is in place, you need to establish an area where there is a high probability the correction will end

- you're in an uptrend and given the structure of the market, you are looking for a change in trend. You need to establish an area where there is a high probability the trend will end.

DGL's are great for this.

+ + You then need to define a series of high probability setups. I define this idea as indications that the support/resistance area are likely to be effective.

**There are three groups of setups. These (with examples) are:
time: Delta, Gann dates, Fibo dates, cycles, etc
volume/price: Wyckoff, Arms etc
price: Candelsticks, 5VBT etc**

You can of course mix setups from each group.

**+ + Finally you need to establish an entry technique and initial stop.
eg the ATR posted here recently.**

The principle here is you need some means of identifying rejection away from the zone.

* trade management

Once you are in a trade, you need to manage it.

+ + at its most basic, this involves a trailing stop.

+ + however, I have found that the "rule of three" allows you to take some profits early while retaining the possibility of taking part in large trending moves - the best of both worlds. I posted this idea before. If you missed it, e-mail me and I'll resend it.

When the trading plan is in place, you need to establish a money management approach. This has two purposes:

a how much capital is needed to fund each contract, b the stop loss for each position

Both questions are determined by four factors:

a financial capacity to lose ie your capital base b psychological capacity for loss

c the profitability profile of your methodology d the volatility of the markets you are trading

I won't go into this here - this post is getting too long as it is.

However I did write an article on this topic on the Realtraders Website, <http://www.realtraders.com/>.

Go to "trading secrets" and to my "shelf".

regards

ray

-----Name: ray barros

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101/25 Market Street

Sydney NSW 2000

Australia

E-mail: ramon@world.net Date: 12/14/96

Time: 11:24:06

In any given market, the sum total of all traders's perceptions is one collective perception which, at any given moment, creates the price and hence the reality of the marketplace. Every trader's account is credited or debited based on this.

If that perception is not in harmony with the collective perception of the market, that trader will be punished by losing

money.

These are not my personal beliefs anymore than the law of gravity belongs to Newton. This is the way of the market. But, perhaps this is all wrong given that it is coming from someone who you claim has a 70 IQ. On that last point, I think you may be on to something. Every since graduating from my third rate alma matar college, I have been working hard at dumbing down so I could become a better trader. Since arriving on the CBOE trading floor in 1975, I came to the conclusion that trading genius lies in the brain of a 4 or 5 year old child. More recently, I had the opportunity to test this hypothesis and was pleasantly surprised when my then 4 1/2 year old son produced some extraordinary trading results, i.e. 62% winning trades with a 2.41 to 1 win/loss ratio, and more than \$7,000 in profit in about ten trading days. Please keep in mind that for the purpose of this experiment I provided little or no instruction to him on the markets. I merely ask him to look at some charts and indicate up, down, sideways, or that he didn't know. I then took the markets for which he had an up or down opinion and did a paper trade based on the close price of that day, i.e. bought if he said up or sold if he said down. So if IQ measures one's intelligence in relation to one's age, I can see how it would be helpful for me to perhaps reduce my IQ to about 25 in order to become a more succesful trader. I thank you for your assessment of me being at an 70 IQ, as this shows that I have been making steady progress in reducing my IQ.

Norman nwinski@naples.infi.net

What makes you think that determining market direction and chosing indicators are relevant in making money trading? If you look for these, you become an analyst, not a trader.

Joe Ross: "TRADE WHAT I SEE, NOT WHAT I THINK!"

You can fool all of the people some of the time and some of the people all of the time. The best time to buy is when blood is running in the streets, even if it is your own.

Neal T. Weintraub in "Tricks of the Floor Trader" said: You will run out of money before a guru runs out of indicators...

Subject: Re: Poll: Pick your favourite three indicators In order of priority:

1. Price
2. Price
3. Price

The problem is, the tighter the stop, the more likely noise will stop you out with a loss even if your entry was good and the trade will show a profit if you stay in. Therefore the best stops are not stops in the traditional sense but rather short and long exit signals based on careful system design and with due respect to the reasons why the system got you into the trade. Do the justifications for entry still exist? Bottom line is that exiting a position requires as much thought in system development as entries do. The better the system, the less often you will wish you had a stop loss that was not already part of the system itself. These days, many system writers are looking to volatility as part of the criteria for entry and exit, but other factors involve partial vs. complete profit taking, looking at multiple time frames. etc. James Charles money4u@erols.com

Try looking at a 3/9/15 Exponential Moving Averages and trade multiple contracts (2 or more). When the 3 crosses the 9 sell one. If the 3 crosses the fifteen sell the rest. If the 3 doesn't cross the fifteen you will still have a contract or two on. This can reduce the number of whipssaws. It will also increase the dollars of profit per trade and decrease the dollars of loss per trade. POINT IN THOUGHT: has anyone considered in which time frame you use your moving average? If you trade 5 min charts, what about putting the MA on the next longer time frame(20 min)? Comments or ideas welcomed.

Richard Chehovin GalacticFXInternational@worldnet.att.net

Should you desire to increase this stop loss (1% of cap.), you should reduce accordingly the size of the position or exposure you have in that market and at that method at that particular time.

= > adjust stop loss and profit-taking levels
as the profit in a position increases, you should reduce the position size to maintain a maximum portfolio exposure and, ideally, in effect you will be investing only the profits generated in the trade (!).

1. I trade a basket of commodities having certain margin requirements.
 2. I fund my account at least 2 times margin. I can thus withstand a drawdown of up to 40% emotionally...
 3. I increase my units of trading when I have enough money to cover taxes and another 2 times margin.
- It is simplistic but it works for me. Rumery and Lehman also offer a system.

If you know the approximate drawdown (who really knows???)...you must then fund your account according to your temperament..., i.e. it sounds as if you are uncomfortable with the % drawdown....deleverage by having a larger account size...thus a lower % drawdown... If that is not possible, try to deleverage by switching to the DJH8 or ESH8...thus accomplishing the same effect. Tom Stein comfut@msn.com

I use threshold levels to increase my trading size. My formula is:
 $2 \times \text{max historical drawdown} + \text{margin} = \text{equity needed to trade 1 S\&P contract}$. So a 50% drawdown to me means a real 25% drop in equity.

By drawdown I'm talking about my total net running drawdown. I always use stops on my individual trades which keeps my max. daily net loss around 3% to 5% depending how many systems trade that day (I use 3 systems). The recent volatility in the S&P's has forced me to almost double my stops over the last 6 months which has made the drawdowns deeper.

Bob RRedman144@aol.com

Maximizing use of Margin:

Margin for British Pound is \$1552 while Swiss Franc is \$1721, both had almost the same amount of margin requirement to trade one contract. But BP offers the most bang for the buck in which its average EOD close is at around 100+ points compared to SF which is 50+ points.

BP tick size is \$6.25, SF point value is \$12.50.

= > Both point values are NOT 12.50. The Pound is 6.25 per point. Both are 12.50 per TICK, but the minimum tick in the Pound is 2 points. So the margin in this case does accurately represent the "bang for your buck" since the average daily move in both is \$625 per contract.

The tick in the BP is \$6.25 per contract but the minimum tick is two so you are back to \$12.50 per contract.

trading plan has three rules:

- 1) When to get into the market
- 2) When to get out with a profit
- 3) When to get out with a loss

If I flip a coin N times, then the odds that I will never flip a head are $1/(2^N)$. This is true no matter how high a value N I give for N . So it seems plausible that, if I flip a coin a countably infinite number of times, then the odds that I will never flip a head are $1/(2^{\text{countable infinity}})$ --in other words, one over an

uncountable infinity. This result seems reasonable, since the problem can also be looked at as "If I somehow picked a random infinite string of coin flips from the set of all possible infinite strings of coin flips, what would be the odds that I would pick the set with all tails?" There are an uncountably infinite number of infinite strings of coin flips, and I'm looking for exactly one; so, assuming that I'm really picking randomly (so I'm no more or less likely to pick one string than another), the odds of picking the all-tails string should be 1 over that uncountable infinity. Now, if I'm restricting myself to the real numbers, I then proceed to say "Well, any finite number over any infinity must be zero"--so I say that the probability is zero. If I'm allowing myself to use infinitesimals, then finite numbers don't get zeroed out by infinities in this way, so I simply leave the result as it is--1 over an uncountable infinity. That's not a valid real number, but it's a valid infinitesimal.

Yes, this is counterintuitive; but then, so is infinity itself. And think about this: If we exclude infinitesimals, then the odds that an infinite string of coin flips will contain at least one head are "1-but-just-maybe-itwon't-happen." The odds that an infinite string of coin flips will contain at least ten coin flips are "1-and-I-really-really-mean-it-this-time." We're using the exact same probability figure--1--to describe one event that's certain to happen, and another event that's not. Doesn't that defeat the whole purpose of probability figures? Doesn't that suggest that, in problems like this, we're making an error by restricting probability figures to real numbers?

Risk Trailing Stop:

maximum profit is calculated from the point of entry using the highest high if long, or the lowest low if short.

The dollar amount of profit per contract or per position you are willing to risk is then subtracted and the trailing stop is placed at that point.

Multiple Entries:

Average all entry prices (factoring in any profit for any entry) and divide by the number of contracts.

This average, minus a market move that represents an additional \$500 loss, is the stop price, a level where once the position is exited you would lose \$500.

Let's look over the shoulder of an experienced gambler (you will

learn much more on Money Management on Gamblers' websites than on Trading websites!!!):

Here is what a lifelong gambler told me.

You buy in for \$100 at blackjack.

Maximum bet is \$2 until you start winning. Then you increase your bet size. Increase your bet 50% on a win. Go back to \$2 on a loss.

If you lose the \$100 you walk!

If you get to \$175, YOU PUT \$150 in your pocket, never to see daylight again! Now you play the \$25 left. You lose it, you walk. You are now betting \$2 again. Increase your bet 50% as you are winning. When you lose back to \$2.

If your chips total on the table \$50, you put \$25 again in your pocket never to see daylight again !!!

This goes on until you lose the \$25 stake once and then you walk!!!

No drinking and you must be disciplined.

You must follow basic strategy perfectly or use the card.

Sit at third base. Only shoe games. Never take insurance.

Once in a while put out \$1 for them, especially when you have a big bet out there. You have to be comfortable. If there are obnoxious players, cigarets or cigars or dealers that bother you, change tables. If you are tired and up money, do not play anymore.

Never play at a casino that does not let you double down after splitting. Never play at a casino that does not let you double down on any two first cards. If you want to bet \$5 minimum, you must start with \$250; 50 times minimum bet! billhere@att.net

= = > You minimize the casino advantage by knowing when to split and when to double.

What I mean here is that using ONLY WINNINGS or "house money" I follow a classic Martingale betting progression in an attempt to win MORE money, i.e. even when I am only winning LESS than 50% of the hands I am playing. If the table is "choppy" (win-lose-win-lose) or even if it becomes slightly dealer-biased so that I'm only winning, say, one out of three hands, this STILL allows me to slowly win more money than I'm losing.

IF it happens (as it does quite often) that my chasing the losses all fail and I end up back at my starting basic buy-in money (20 units), I will then give up on the progression and basically start over, flat betting my own money and basically pretending that I just arrived in the casino once again.

Negative progressions tend to increase the frequency of winning small amounts but expose you to occasional large losses. Positive progressions tend to increase the frequency of losing small amounts but give you a shot at occasional big wins.

First, gambling is not a continual game resting purely on chance. Individuals can materially affect their odds by knowing what those odds are and making choices to maximize their odds.

Second, no one gambles with unlimited funds thus stop losses and strategies for money management are important to the game.

Third, if you increase your bets when you win but always hold a little back (never betting the entire winnings) you will be better able to take advantage of winning streaks. Probability operates in the long term over many trials. Most

individuals bet for short periods of time. The imbalances that occur in the short term correspond to what people call "luck" and can be very good or very bad without necessarily evening out for the periods people generally play (hours or days vs. months). It is entirely possible to win in the short term and many people do.

I plotted histograms of the actual results. There was the familiar "bell-shaped" normal curve. For regressive betting, it had a long relatively flat tail on the negative side (the small number of big losses) but the bulk of the curve was on the winning side. For progressive betting, the curve was centered on the losing side but had a long flat tail on the positive side (the small number of big wins).

(A distribution with a significant positive skewness [the more extreme values are greater than the mean] has a long right tail. Investors prefer returns and positive skewness and dislike risk and negative skewness)

A measure of the (a-)symmetry of a (return) distribution. Positive skewness would indicate a greater probability of large high returns relative to low returns.

Money Management 4

Money Management-Keywords:

money-management, bet sizing, position sizing, asset allocation, position sizing, bet size, bet sizing, cash flow management, trade management, position management, money management, position management, risk control, optimal exposure, betsize, betsize selection, size of a trade, portfolio heat, portfolio management, portfolio exposure, risk management,

optimal betsize, optimal trade size, trade size, position size, constant size bets, adjusting betsize, betsize adjusting, number of contracts, leverage

Martingale Method (part 1):

The proper way to use it, especially if your system has less than a 50/50 win/loss ratio, is to use your research to see what is the maximum number of losses you have ever had in a row.

Let's say it's 8. Then what you would do, is start increasing contracts, (I recommend 1 at a time), until you get a win, and then go back to your base unit.

For example:

After 8 losses in a row, trading 3 contracts each, you would then increase your contracts to 4. If it is a winner, then go back to 3. If it is a loser, you would go to 5 contracts, etc.. until you win.

This is the most conservative use of the Martingale method. More aggressive uses are:

1. Start increasing after the average number of losses in a row. So here you find out what your average losing trades in a row are.

2. Increase more than 1 contract at each time. So instead of increasing 1 contract after eachloss, you might go 2 or more.

This should not be done unless your system has a better than50/50 win/loss ratio.

The Martingale method, was invented for casino betting, and unfortunately, doesn't work well there, for several reasons.

- Table Limit keeps you from increasing your bet after many losses.

- Inability to remove portion of bet after start of game

- Maximum win is double bet

In futures, the situation is much different:

- No table limit, though you can reach margin limit

- You can remove positions whenever you want

- Maximum win can be many times the average loss

I personally recommend the use of this method and use it every day. Your goal when trading is to make your wins larger than your losses and there is no better way to capitalize on your wins than this.

I start increasing 1 contract after 3 losses, until I win. 80%-90% of the time I win then, and the rest of the time, the market takes me a few more rounds, and then rewards me.

Although exceeding 8 losing trades in a row while increasing has never happened to me, my current plan for that situation is to stop increasing after the 9th loss. Hopefully I will never have to write about that event, though I am always expecting it to

happen.

Now since we are far from graduation, I don't want any of you using this method, unless you are 100% capitalized to take 10 losses in a row, increasing each time, plus you already have a winning system. I will be going over this strategy much more after graduation.

I do have something that all of you can start researching now and which should help a lot of new traders be successful in their trading, and you will find that in part 2 of this mini-series.

Martingale Method (part 2):

***** Only take trades after "x" losing trades in a row. *****

For example:

Let's say your research shows you that on average you suffer 3 losing trades before you get a winner. So you would be OUT of the market and would watch the market, and wait patiently waiting for 3 losers in a row. Only then would you risk capital and start trading. You should then take every trade after that until you win.

Now here you have a couple of options:

- 1) Start after the 3rd loser with a higher starting base of contracts than you normally would. (If normally you would only consider starting with 1 contract, think about trading 2).**
- 2) Consider increasing contracts by 1 after each loss thereafter. So if on that 4th trade youlose it, then add 1 contract and take the next trade. Keep on doing so until you win.**

The name of the game in trading is Win BIG and lose small. This risk management tool allows you to do that.

The reason this works well, is that the markets go into streaks of losing periods (choppy markets) and eventually take off in a big way in one direction. This method allows you to be a part of that without enduring all the losing trades. This is NOT a miracle solution. One of the problems that you will encounter is that your wins might be very small.

For example, let's say you wait for the 3 losing trades and then get in, but that one is a loser and you lose 4 ticks. Then the next one is a loser and again you lose 4 ticks, but the following one is a winner but you only get 8 ticks out of it.

While you may have broke even you ended up losing because of commissions. On average this may happen to you 30% of the time, so be prepared for it. The rest of the time you should have nice trends.

So one last plug on working on your risk/money management tools and less on indicator selection. Ok?

How correlated are the drawdowns of the various components of your portfolio, and what will the effect be of a worst case event on the entirety of the capital you have been entrusted with?

Please note: A Neutral Position is a signal! Neutral means that the system is not currently in the market but is looking to enter either a long or short position.

The 2% money stop is for accounts < \$50,000.

Risk a certain percentage of money invested on the entry, then raise that percentage, as well as trailing the stops.

Hallmrcdi@aol.com:

The chance of a coin being flipped one time landing on heads is not 50%. It is either 0% or 100%. It is either heads or it is not. The 50% chance is based on an expected average that is itself based on multiple, even 10,000 flips or more, that have nothing at all to do with the outcome of the single real flip that is happening at this moment. We make a terrible mistake and waste our money by solely relying on statistical abstractions and by applying them to a particular casino, table, session, or hand of cards to determine what is "good" or bad."

Again, the single coin flip is either heads or tails. What has happened for all time past and all time future has nothing at all to do with the outcome of the moment. It truly is a single event. Instead, the recreational gambler's real friend is variation. While one cannot predict when variation will occur, one can predict that it will with certainty occur. The amount one bets during an extremely positive string of wins in a statistically short occurrence will determine if the recreational gambler comes away a big winner, while making sure to sit at a single deck game (the factor that drives the edge lower than anything else) is nearly useless.

Van Tharp:

3 Money-Management algorithms (min will be taken):

1) 1% of core capital:

a) $(\text{core capital} - \text{Total outstanding risk}) * 0,01 = x$ b) $x / \$ \text{value of initial stop} = \text{Nr. Contracts I}$

2) new risk limited (total risk < = 25% of equity): before

execution: $\text{equity} * 25\% \text{ total risk} = y$
if $y > 0$, $y / \$ \text{ value of initial stop} = \text{Nr. Contracts II}$

3) ongoing volatility (10 day M.A. of ATR): max 2% of equity

If a share doubles in one year and halves in the next we have an arithmetic return of: $100\% - 50\% / 2 = 25\%$ per annum and a compound gain of $2 \times 1/2 = \text{zero}$.

If the right proportion of risk capital is put to that risk, a six percent geometric return can be extracted.

Trading can be mastered if you concentrate your efforts on how you will react to price rather than desiring to predict it. Reacting is a business decision, predicting is an ego play.

Traders want to make money. Losses in the long run don't matter. Forecasters (prophets) want to be right (ego). And that's all that they are concerned about.

Don't decide anything (ego), let the market do that job for you (business).

Like any other business you have a business plan and the financial portion of that plan is the most important.

In this business your inventory is stocks, bonds, futures or options. Like any other business you define what an acceptable loss is on an item and what is an acceptable profit for the risk undertaken. Like any other business

if the item of inventory doesn't do what you expected it to do, you put it on sale and liquidate it to raise capital to purchase inventory that will do what you want it to do. Your acceptable loss is your stop. Your money management system tells you how much that is. Your mark up is dependent upon your trading system and trading style. It doesn't make any difference if you are a day trader or an investor. Like any business, some turn their inventory 10 times a day, some 20 times a year and some only twice a year. Your trading style and inventory volatility will tell you what your turnover rate will be. Trading is a business and if you treat it as anything else you will be a loser.

Losing traders spend a great deal of time forecasting where the market will be tomorrow. Winning traders spend most of their time thinking about how traders will react to what the market is doing now, and they plan their strategy accordingly.

If one were to ask a successful trader where he thought a particular market was going to be tomorrow, the most likely response would be a shrug of the shoulders and a simple comment that he would follow the market wherever it wanted to go.

Winning traders acknowledge their emotions and then examine the market. If the state of the market has not changed, the emotion is ignored. If the state of the market has changed, the emotion has relevance and the trade is exited.

Establish a trading and money management strategy to determine how much of the available funds should be used at each buying opportunity. In particular, at the start, such money must be held in reserve for future buying. Later, when some stocks have been sold at a (hoped for) profit, there may be a considerable amount of cash available for new purchases. What percentage should be deployed at the next buy signal? Is it better to build up cash reserves resulting from profitable sales in order to wait for a subsequent market decline and even better buying opportunities? Part of the money management would deal with potential "stop-loss" sales and what to do when all of the funds have been invested and there is a new buy signal. Should some stock be sold to provide funds for the buy, or should the signal be skipped?

As a simplified illustration of how hard it is to time the market, assume that you are 70% accurate calling market turns. If you are in the market, two calls are required: a sell and a subsequent buy. The probability of being correct (buying back in at a lower price than your selling price) is 70% times 70%, or 49%. That shows you have to be very good (and most people are not much better than a coin toss) to be successful at market timing.

I have a clearly defined sell strategy, and I will sell for three reasons, all of which helps me to control risk. My belief is that capital preservation is every bit as important as making it grow. 1) I set upside price targets for all of our investments, using future estimates and premiums or discounts to the S&P 500 market multiple. As I approach 90% of our upside target, I will begin to sell. I am never afraid to take profits. Second, if a stock declines about 15% or so from where I bought it, I will sell part of the position, maybe five or ten percent, and quickly reevaluate my catalyst or my reason. 2) If at any time during my ownership period, my catalyst changes for the negative, I will sell my entire

position. I do not hesitate to admit that I am wrong. 3) Finally, and the third reason to sell, is that I am very opportunistic and am always looking for better returns elsewhere. The marketplace is often inefficient and irrational, and I try to take advantage of short-term volatility and the inefficiencies of information flow amongst other mutual funds.

Dennis Holverstott dennis@coinet.com:

$$\text{risk \{disaster stop\} = factor_1 * volatility \#_contracts = factor_2 * account_size / volatility}$$

So, $\#_contracts$ is proportional to $account_size / risk$. To find $factor_2$, program the system to trade 10 contracts at peak volatility and more when volatility is lower. Export the "volatility adjusted" P/L numbers to a file and divide them by 10. Run a monte carlo sim (thanks dkomo) on the results and you will have a pretty good idea of possible drawdowns (volatility adjusted). Then, you can choose a $factor_2$ that matches your risk tolerance.

Once you have studied TA enough to realize how true this is, you will be ready to think about playing with the big boys in the futures pits.

The sooner you accept reality and purge fantasy from your brain the sooner you will be on your way to actual success in trading.

* Good markets don't give you a good opportunity to buy. *

If you believed the ads and could make \$1000 a day on \$10,000 capital, you could get 200% return every month. Compound that out and you will own the world in a few years.

Stocks are never too high to buy and never too low to sell.

A bull market will make us look smarter than we really are. "A rising tide lifts all boats."

I am a technician and will do what the market tells me.

There is no way to provide an estimate of the absolute worst outcome (in the same sense that the tails of continuous probability distributions are unlimited).

It's the Execution or implementation of your trading plan that is the bigger challenge. Throw out 99% of all the crap I learned about oscillators, divergence's, Elliott Wave, cycles, timing, seasonals, Gann, pitchforks, volume, fractals, RSI, stochastics, overbought/oversold (this is a good one - the stock indexes, currencies and cotton for example everyone said were overbought and topping in February and March this year). Look what they did. Needless to say, I don't pay attention to this

anymore either, etc., etc. The list goes on to infinity almost. I went back to the basics. I went back to a few simple chart patterns, (a simple moving average and trendline now and then for a visual aid).

Most people make finding the method the big challenge. That is because there is so much junk thrown at traders. They feel like a child in a candy store and have to try every doodad in the place. When they are done, they are sick and never want to see another candy store (trading gizmo) again. They could have had the plain piece of milk chocolate at the front of the store (simple method price patterns) which would have done everything they desired and fulfilled all their needs.

The addition and removal of winning positions at key turning points in a market may hold the key.

Trade to make money, not to be "right" or satisfy some personal agenda. The key to success is to know your limitations and don't trade outside your psychological and risk comfort zones.

Then the trade you entered begins to perform well, and trends in a wave type pattern earning back not only the \$1,200 previously lost on the first 3 trades, but another \$3,000 on just one contract. Once this trade gets going and confirms a trend, you begin to prudently add on one more contract at a time on each new short spurting rally to the next higher level. Now you're up over \$8,000 on the one trade with a trailing sell order (covered in the 3 month course) following the price up so that when the market turns down, you're out with healthy gains.

Someone who has to be right a high percentage of the time is someone who needs constant re-inforcement that they are alright, i.e. a good person. This is all about psychology and how one feels about oneself.

But, which of the following is better: Is it better to make

A. \$2, 80% of the time or B. \$6, 60% of the time or C. \$10, 40% of the time?

Assuming that the losses are the same for each profile, the answer is C. which has the lowest winning percentage because the probability times the expected value = the risk adjusted value or in this case $40\% \times \$10 = \4 vs risk adjusted values for A. = \$1.60, and B. \$3.60.

People who have trouble with this concept are often victims of

the educational system which teaches that the key to be successful is being right. One can see from the above example how wrong that can be. The true paradigm for trading is that IT'S OK TO BE WRONG, JUST DON'T BE WRONG FOR LONG. So, now one must make a philosophical decision as to what is more important, being right or making money. If profit is the ultimate goal and not ego then one will adapt to having a smaller percentage of winning trades in exchange for more money over time on the bottomline. To do this, for an experiment, see what happens on a minimum trade size, say a one lot, see what happens if you double your profit target, i.e. rather than going for \$2, go for \$4. Then keep track of both systems and see which one over several months is more profitable.

Changing the 25 X 25 System Exit

After the last big run up in bonds we observed that the logic of the "25 X 25" Bond System exits needed some improvement. The system was operating on the assumption that in a trending market the longer we hold a position the greater the profit. The exit strategy was intended to more or less force us to hold positions at least 25 days or more.

The problem we discovered was that after the recent buy signal we had a huge profit after only 12 days and the stop was still too far away. Our original logic was flawed because we equated time in the trade with profitability rather than simply measuring profitability directly.

Big profits need to be protected regardless of how long it takes to obtain them. As usual the fix was easy once the problem was defined. We simply added an additional exit that moves the stop up as soon as we have 5 Average True Ranges of profit. This is not a curve fit for one event. There were several other times in our historical data where this exit was needed. The logic of the exits makes much more sense now. We should have spotted this flaw earlier because we want all of our systems to be as logical as possible. We continuously emphasize that the logic of a system is much more important than the historical performance data.

Here is the additional line of code that will convert the previous

system into version 2.0:
if $c > \text{entryprice} + (5 * \text{AvgTrueRange}(45))$ then exitlong
lowest(low,2) stop
Average True Range

In this Bulletin we will show some of our favorite applications of ATR as part of our entry logic.

Sample Applications of ATR as an entry tool:

Entry Setups: (Remember, entry setups tell us when a possible trade is near. Entry triggers tell us to do the trade now.)

Range contraction setup: Many technicians have observed that big moves often emerge from quiet sideways markets. These quiet periods can be detected quite easily by comparing a short period ATR with a longer period ATR. For example if the 10 bar ATR is only .75 or less of the 50 period ATR it would indicate that the market has been unusually quiet lately. This can be a setup condition that tells us an important entry is near.

Range expansion setup: Many technicians believe that unusually high volatility means that a sustainable trend is underway. Range expansion periods are just the opposite of the range contraction periods. Range expansion periods can be measured by requiring that the 10 bar ATR be some amount greater than the 50 period ATR. For example the 10 bar ATR must be 1.25 or more times the 50 period ATR.

If you are concerned about the apparent contradiction of these two theories we could easily combine them. We could require that a period of low volatility be followed by a period of unusually high volatility before looking for our entry.

Dip or rally setup: Lets assume that we want to buy a market only after a dip or sell it only after a rally. We could tell our system to prepare for a buy entry whenever the price is 3 ATRs or more lower than it was five days ago. Our setup to sell on a rally would be that we want to sell short only when the price is 3 ATRs or more higher than it was five days ago. The choice of 3 ATRs and five days is simply an example and isn't necessarily a recommended choice of parameters. You will have

to figure out the proper parameters on your own depending on the unique requirements of your particular system.

Entry Triggers:

Volatility Breakout: This theory assumes that a sudden large move in one direction indicates that a trend in the direction of the breakout has begun. Normally the entry rule goes something like this: Buy on a stop if the price rises 2 ATRs from yesterday's close. Or sell short on a stop if the price declines 2 ATRs from the previous close. The general concept here is that on a normal day the price will only rise or fall 1 ATR or less from the previous close. Rising or falling 2 ATRs is an unusual occurrence and indicates that something out of the ordinary has influenced the prices to cause the breakout. The inference is that whatever caused this breakout has major importance and a new trend is beginning. Some volatility systems operate by measuring the breakout in points rather than units of ATR. For example the system may require that the Yen must rise 250 points from the previous close to signal a breakout to the upside. Systems measuring points rather than units of ATR may need frequent reoptimization to stay in tune with current market conditions. However, breakouts measured in units of ATR should not require reoptimization because, as we previously explained, the ATR value contracts and expands with changing market conditions.

Change in direction trigger: Lets assume that we want to buy a dip in a rising market. We combine the dip or rally setup described above with an entry trigger that tells us the dip or rally may be over and the primary trend is resuming.

The series of rules might read something like this: If the close today is 2.0 ATRs greater than the 40 day moving average (this condition establishes that the long term trend is still up) and the close today is 2 ATRs or more below the close seven days ago (this condition establishes that we are presently in a dip within the uptrend) then buy tomorrow if the price rises 0.8 ATRs above today's low. This entry trigger shows that we have rallied significantly from a recent low and that the dip is probably over. As we enter the trade the prices

are again moving in the direction of the major trend. As you can see, the ATR can be a most valuable tool for designing logical entries. In our next article we will discuss using ATR in our exit strategies and give some interesting examples.

Average True Range

Average True Range is an indispensable tool for designers of good trading systems. It is truly a workhorse among technical indicators. Every systems trader should be familiar with ATR and its many useful functions.

It has numerous applications including use in setups, entries, stops and profit taking. It is even a valuable aid in money management.

The following is a brief explanation of how ATR is calculated and a few simple examples of the many ways that ATR can be used to design profitable trading systems.

How to calculate Average True Range (ATR):

Range: This is simply the difference between the high point and the low point of any bar.

True Range: This is the GREATEST of the following:

1. The distance from today's high to today's low
2. The distance from yesterday's close to today's high, or
3. The distance from yesterday's close to today's low

True range is different from range whenever there is a gap in prices from one bar to the next.

Average True Range is simply the true range averaged over a number of bars of data. To make ATR adaptive to recent changes in volatility, use a short average (2 to 10 bars). To make the ATR reflective of "normal" volatility use 20 to 50 bars or more.

Characteristics and benefits of ATR

ATR is a truly adaptive and universal measure of market price movement. Here is an example that might help illustrate the importance of these characteristics: If we were to measure the average price movement of Corn over a two day period and express this in dollars it might be a figure of about \$500.00. If we were to measure the average price movement of a Yen contract it would probably be about \$2,000 or more. If we were building a system where we wanted to use the set appropriate stop losses in Corn and Yen we would be looking at two very different stop levels because of the difference in the volatility (in dollars). We might want to use a \$750 stop loss in Corn and a \$3,000 stop loss

in Yen. If we were building one system that would be applied identically to both of these markets it would be very difficult to have one stop expressed in dollars that would be applicable to both markets. The \$750 Corn stop would be too close when trading Yen and the \$3,000 Yen stop would be too far away when trading Corn.

However, let's assume that, using the information in the example above, the ATR of Corn over a two day period is \$500 and the ATR of Yen over the same period is \$2,000. If we were to use a stop expressed as 1.5 ATRs we could use the same formula for both markets. The Corn stop would be \$750 and the Yen stop would be \$3,000.

Now let's assume that the market conditions change so that Corn becomes extremely volatile and moves

\$1,000 over a two day period and Yen gets very quiet and now moves only \$1,000 over a two day period. If we were still using our stops as originally expressed in dollars we would still have a \$750 stop in Corn (much too close now) and a \$3,000 stop in Yen (much too far away now). However, our stop expressed in units of ATR would adapt to the changes and our new ATR stops of 1.5 ATRs would automatically change our stops to \$1500 for Corn and \$1500 for Yen. The ATR stops would automatically adjust to the changes in the market without any change in the original formula. Our new stop is 1.5 ATRs the same as always.

The value of having ATR as a universal and adaptive measure of market volatility can not be overstated.

ATR is an invaluable tool in building systems that are robust (this means they are likely to work in the future) and that can be applied to many markets without modification. Using ATR you might be able to build a system for Corn that might actually work in Yen without the slightest modification. But perhaps more importantly, you can build a system using ATR that works well in Corn over your historical data and that is also likely to work just as well in the future even if the nature of the Corn data changes dramatically.

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In this article we will show some specific examples of how using ATR can help to make our systems more robust.

First let's look at a simple buy only system for Corn without using ATR. Here are the rules:

1. Buy Corn whenever it rises 4 cents per bushel from the opening price.

2. Take a profit whenever the profit reaches 18 cents per bushel.
3. Take a loss whenever the loss reaches 6 cents per bushel.

Now let's build the same system using ATR. (Assume that the 20 day ATR is 6 cents).

1. Buy when the price rises 0.666 ATRs from the open.
2. Take a profit when the profit reaches 3 ATRs.
3. Take a loss whenever the loss reaches 1 ATR.

We have the original system and a modified version that has substituted ATR for the important variables.

The two systems appear to be almost identical at this point. They both will enter and exit at the same prices.

Now let's assume that the market conditions change and the Corn market becomes twice as volatile so that the ATR is now 12 cents per day instead of 6 cents. Here is a comparison of the original system and the ATR system:

1. The original entry of 4 cents per bushel from the open is now too sensitive. It will generate too many entry signals since the daily range is now 12 cents instead of only six cents. However, the entry expressed as 0.666 ATRs will adjust automatically and will now require the price to move 8 cents per bushel to enter. The frequency and reliability of our entries remains the same as before.

2. The original profit objective of 18 cents per bushel is much too close for a market that is now moving 12 cents per day. As a result the profits will be taken too quickly and our original system will be missing many opportunities to make much bigger profits than usual.

However the profit target expressed as 3 ATRs has automatically expanded the profit objective per trade to 36 cents per bushel. Significantly larger profits are now being realized by the ATR system as a result of the increased volatility.

3. The original stop loss of 6 cents per bushel will now be hit frequently in a market that is moving 12 cents per day. If you combine these frequent stop loss exits with the overly frequent entries being generated, you have a classic whipsaw situation and we can expect to encounter a severe string of losses. Our original

system is now failing because the market conditions have changed. We need to fix it or abandon it in a hurry.

However let's look at our ATR version of the system. The stop loss expressed as 1 ATR now sets our stop farther away at 12 cents so it isn't being hit any more frequently than before. We continue to have the same percentage of winning trades only the winning trades are much larger than before thanks to an increased profit objective. Our ATR system has a nice series of unusually large winning trades and is currently making a new equity peak. The ATR system now looks better than ever.

In our example, the proper application of ATR has made the difference between success and failure.

Here is a system that grows:

Take a look at a commodity like March Coffee KC. Then look at the Highest High for the last 20 days and lowest low for the last 20 days I think the HIGHEST HIGH is 125 (1/5) and LOWEST LOW is 113 (12/21) so the 20 day channel is 375 big points which is the same as \$4,500 dollars.

The exit is the difference between the HIGHEST and LOWEST at the time of the trade or 125.5-113 12/21.

This is the amount that we trail upward on this trade.

You then take your bankroll:

let's say you start trading with \$1,000,000

and you only want to risk 1%

$1\% \times 1,000,000$ is \$10,000

$\$10,000 / \$4,500 = 2$

you then would buy 2 contracts of Mar coffee if it broke through the high or low and you would trail the stop at 125-113 = 12 big points

(12 Big Points mean you risk $12 * 375 = \$4500$ per contract)

This system grows with you forever and you can take any days 20-40-100 but in TradeStation, you cannot test systems that share a common bankroll among commodities.

My first approach was to find max DD and then use it or 2X it to find an amount of contracts to buy, my second approach is to use the size of the channel to determine contract size.

I think people that know C++ and other languages can also test

markets simultaneously.

I fake test this by testing each commodity one by one...lets say I start with coffee and 1 million and risk 1%...I run all of coffee and lets say I end up with 2 million, I then use the 2 million and use it in OJ, then run it, then take that value onto the next commodity...so I use a manual linear technique which is not perfect, but gives me a rough idea.

Money Management 5

Here are what I have determined to be the greatest lessons of future trading and money management

1. Break-Out systems are the best.

Moving averages and other system all work well on paper...but they have very large drawdowns and it is easy to look at drawdowns on paper...in real life, most people can't watch 45% of their money disappear. I think many of the top traders prefer channel break outs. Dennis, Seykota, Kaufman.

2. You make much of your income on BIG rare trends. I find many break out systems to trade between 40% wins and 50% wins...almost a coing flip. BUT I find the average win is 2 times the average loss. So you use the trailing stops to get out of the bad trades at 1% each time

3. Large accounts have a HUGE mathematical advantage over small bank accounts. I tried to explain this in my earlier letter. Remember when I talked about the March Coffee KC and then look at the Highest High for the last 20 days and lowest low for the last 20 days

Trade Plan:

Question: Example Trade:

Futures Contract Gold

Contract Month Dec

Where is support on the monthly chart? 277.5

How long ago was the market BELOW support? 1979/19yrs

Where is resistance on the monthly chart? 417.5 How long ago was the market ABOVE resistance? 1990/8yrs

What is the top price of the trend (daily chart) that is changing?

352 What is the bottom price of the trend (daily chart) that is

changing? 287.2 50% retracement of these two points (Profit Target)? 320

What is your entry point? 300

What is your stop out point (Loss Target)? 295

Entry Point minus Profit Target (Potential Profit) 20

Entry Point minus Loss Target (Potential Loss) 5

Potential Reward & Potential Profit (Reward:Risk Ratio) 20/5 (4:1)

1) Plan your trade. Trade your plan.

This means use the same sequence every time. If your plan is to get in when the weekly and daily trend are in the same direction, volatility is rising and a 1,2,3 is formed. Follow it.

Every time. This could also be seen as discipline which is defined as "to train or develop by instruction and exercise especially in self-control.

2) Money Management.

This means more about managing losers than winners. Greed will generally keep you in a trade long enough to "Let your winners run." But, managing your losers is the key to trading for a lifetime. Don't add to a loser. If you owned a dry cleaners that was losing money would you open another shop across town? Follow your stop you set-up in Rule 1 when emotions weren't clouding your judgment. NEVER, EVER MOVE YOUR STOP LOSS AWAY FROM THE MARKET.

3) Proper Quantity.

Don't think, even on a trade that fits your "Trade Plan", that you should load up to get back at the market. Yes, there are times when you should increase your quantity above normal, but not at the risk of placing your whole account at risk. Similar to diversification, never diversify at the risk of putting yourself in borderline trades. I love trading options in three's. When the options have doubled, take profits on one, free-trade the second and let the third one run unencumbered. With futures, never "Reverse Pyramid". A reverse pyramid is when you start at 1 contract, increase to 2, then increase to 4 and so on. This is like a pyramid on it's head (reversed), easily toppled. Instead build a strong base but never add more in quantity than what you started with.

Math Question Challenge

From: "Andy Dunn"

To: omega-list@eskimo.com Subject: Math Question Challenge

Can anyone write me a formula for the following.

I have a system and the average WIN is 2X the average LOSS

The system WINS exactly 50% of the time

Let's say I start with \$1M

Each time I trade, I risk 1% of the bankroll (starts at 1M then goes up with each trade)

Can anyone write an algebraic formula that will determine the yearly Rate-Of-Return depending on HOW MANY trades this system does each year?

Date: Wed, 16 Dec 1998 09:33:57 -0500

From: Val Clancy

To: andy@lips.com

CC: omega-list@eskimo.com

Subject: Re: Math Question Challenge

In this specific case:

$(.99^{n/2} - 1) * 100$

where n = total number of trades. Val.

Date: Wed, 16 Dec 1998 10:12:29 -0500 From: "Gaius Marius"

To: "Val Clancy" ,

Cc:

Subject: Re: Math Question Challenge

Val,

Can you explain the formula? Is the .99 derived from (100% - 1%) risk of the bankroll?

Is it raised to the power of n/2? And where did the 1 come from?

Where does the 50% of the percentage of winning trades fit in the formula? And the ratio of wins to losses?

Andy

-----Date: Wed, 16

Dec 1998 10:19:43 -0500

From: Bob Fulks

To: andy@lips.com
Cc: omega-list@eskimo.com

You don't say what the loss percentage is. Assume you lose L (as a fraction) of your capital on each losing trade and win $2*L$ (as a fraction) of your capital on each winning trade. Assume trades occur in pairs - one win followed by a loss. Then:

$$\text{End} = \text{Start} * ((1-L)*(1+2*L))^{(n/2)}$$

For example, if the loss on a losing trade (" L ") is 0.5% of your capital ($L = 0.005$)

and the number of trades in the year (" n ") is 400

$$\text{End} = \text{Start} * ((0.995)*(1.01))^{(400/2)} = \text{Start} * 2.68$$

So the ending value would be 2.68 times the starting value or a profit of 168% in the year.

This assumes you adjust the trade size as you capital increases/decreases. Hope this is what you meant.

Bob Fulks

Date: Wed, 16 Dec 1998 10:13:36 -0500 From: Val Clancy
To: andy@lips.com
CC: omega-list@eskimo.com
Subject: Re: Math Question Challenge

win/loss trade ratio = 2

% win / loss = 50

initial accsize = 1M

losing trade (risk) = 1% of account size

Solve for: yearly ROA

Solution:

$\text{ROA} = (\text{GrossProfit} - \text{GrossLoss}) / \text{initial account size} * 100$; if win/loss = 2 then GrossProfit/GrossLoss = 2 then GrossProfit = $2 * \text{GrossLoss}$

$\text{ROA} = (2\text{GrossLoss} - \text{GrossLoss}) / \text{initial account size} * 100$ or
 $= \text{GrossLoss} / \text{initial account size} * 100$;

$\text{GrossLoss} = \text{initial accountsize} * [(1 - \% \text{risk})^{n/2} - 1]$ where n
 $=$ total number of trades losers and winners risk = .01 then

Gross Loss = initial accountsize ($.99^{n/2} - 1$)

$\text{ROA} = (.99^{n/2} - 1) * 100$

so in this case ROA depends only on number of trades you make
so at 100 total trades ROA = 39% of your account size at 50
trades - 22%

at 2 trades - 1.99%

The general formula to use is the Compound Interest Formula: $\text{Int} = \text{Principal} [(1 + \%)^n - 1]$;

in case of trading, %risk is simply negative % so the general formula for the total loss is:

$\text{GrossLoss} = \text{InitialAccountSize} [(1 - \%\text{risk})^n - 1]$; general formula for the total profit is

$\text{GrossProfit} = \text{InitialAccountSize} [(1 + \%\text{profit})^n - 1]$; Val.

Correct me if I am wrong.

Portfolio Management Subject: efficient frontier

Author: John G. Nelson Date: 10/17/98 JNelson675@aol.com

I have read the original and to-date replies and feel that the "efficient frontier" concept is very important for investors and actually a rather simple concept, even though it is also profound. Harry Markowitz, in his 1952 15-page paper "Portfolio Selection", laid the ground-work for Modern Portfolio Theory, and in 1990 became a co-winner of the Nobel Prize for his work in this area. The basic equation used to calculate the EF was in my elementary statistics book as the equation for the expected variance for a weighted sum of correlated random variables. While a correct direct application requires an enormous table of correlations, which the small investor is not going to get, the simplified version can be very useful. If you assume a constant (mean) correlation, which will approximate the correct results in a portfolio of any reasonable size, then that part of portfolio variance (of return) which can be reduced by diversification (~50%) can be approximated as $(N-1)/N$. This is why Value Line suggests portfolios of 10 to 12 stocks, and empirical studies show little additional variance reduction when you hold more than 16 stocks.

Date: Wed, 9 Dec 1998 09:21:31 -0500 From: "Gaius Marius"

To: omega-list@eskimo.com Subject: Re: Money Management

:Scott, This sounds like it may be a great idea but I don't have a :clue as to how to treat a system as a transformation of raw price. I :sure would appreciate an example and / or clarification.

One way of using money management: If you have a smooth equity curve (see attached GIF), and you can trade multiple contracts, when you see a retracement on the equity curve, increase your positions in the original direction of the trade. I.E., my system has historically gone

against me by 10 points one third of the time before it reverses direction and goes in my favour (if it goes against me by 13 points, I know it will never reverse and go again in my favour. So I get out).

So what I do is increase my position when it goes 10 points against me and then get out (of both positions) if it goes 13 points against me from my original entry. This reduces my average

entry price and results in another 40% ROA.

::Here's a clue for you. Treat a system as a transformation of the ::raw price series. In futures, other than equity contracts, the raw ::price series goes up and down. If your system has an edge, then the ::transformed price series should be gradually upward sloping, like a ::the long term chart of the stock market. Now treat the transformed ::price series as an asset class and mix them altogether via MPT and ::presto, your can get some great stuff like I have.

Date: Wed, 9 Dec 1998 18:43:18 -0800 (PST) From: Jim Osborn
To: omega-list@eskimo.com
Subject: RE: Money Management

MARTIN MARTIN Bernardo responds:

> I would appreciate if you or any other member of the list could
> expand more or give me references on the following;
> 1. Scaling in/out as a way of protection (not exposing to much at the >begining of a trade) and maximizing your profits (let profits run)

My approach is pretty informal: Start with one contract, then when you have enough profit in that contract that a reasonable stop on two contracts still leaves you with a satisfactory profit, consider adding that second contract. On the exit side, keep a trailing stop somewhere safely back from where you think the market shouldn't go, but OCO that with a profit target where you think the market might, in your wildest dreams, get to.

Joe diNapoli, Mr. Fibonacci, has some interesting techniques for being a bit more quantitative about profit targets. You might track him down somehow and see what you can find. He's spoken at TAG a few times, so that'd be a good starting point. Maybe someone else can amplify on this point...

> 2. You mentioned some notes of Chuck's TAG lecture some years ago. > How could I get them? Please give any other reference to book, > author, etc. you consider valid

The TAG talk I heard was in 1993, but Chuck has spoken at TAG several other times, too, on various subjects. Contact Tim Slater of TAG at 504-592-4550 for tapes lecture notes from old conferences.

> 3. I guess that what you mention as volatility trailing stops is based in a > certain X ATR of the last Y days? (I myself find it very useful, as the > "turtle" way of determining how many contracts to trade related to > percentage of equity risk and volatility (ATR).

I see in looking up that TAG phone number, that Chuck spoke on "New Techniques Using Average True Range" at this year's TAG conference. I should order that tape myself...

Gee, this is sounding like a ringing endorsement for Chuck LeBeau, and I guess it is. :) You can learn a lot of good stuff from his work.

Cheers, Jim

Dealing with excessive Volatility:

I have a rule of thumb that I try to apply in cases of high volatility that helps me to decide if I should enter a trade in a high volatility situation. I should warn you that this rule sometimes saves me money and it sometimes costs me big profitable trades. The primary benefit of the rule is that it is objective and disciplined. The rule keeps me from just guessing and agonizing over what to do in situations where the volatility is obviously extreme. The rule has some inherent logic that helps me to quantify "extreme" volatility on a system by system and market by market basis.

The rule is that if the recent daily range is greater than the money management stop (!!!) you are using, you don't do the trade. The logic is that our money management stops should be outside the range of what normally happens in one day. To have stops closer than that is to be inside the "noise level" where you can get randomly stopped out for no good reason. Once the market settles down to where the range between the high and low is less than the amount of your stop you could then enter the trade and safely place your stop. Now let me give you a specific example. We just took a quick but

big loss on a Yen trade today and it is now set up for a new trade tomorrow. The range over the last day or two, as we all know, has been far beyond

normal, several times more than our protective stop loss. The trade for tomorrow should be skipped because of the volatility rule described above. If you like, the trade can be entered at a later date when the average true range is less than our stop.

This volatility rule applies to all systems and markets. It does not come into play very often and it is not

something we just made up for the Yen. I have found it to be a valuable rule that I have used for years to limit my exposure in times of excessive volatility.

Please keep in mind that high volatility is an opportunity for unusually large profits as well as losses and if

you skip a big winner you will certainly regret it. For those with more than adequate capital an alternative

solution is to reduce the position size and arbitrarily change the money management stop to a much bigger

number on a temporary basis. If you can afford losses of this size this might be a better solution because you

would avoid being stopped out needlessly and you would still be able to participate in the big winners. Based

on past experience I would say that as a minimum a stop of about two recent average true ranges (!!!) would be

required. Obviously this would be a huge dollar amount to be risking in Yen or S&Ps right now.

My approach is to make stops depend on "percentiles" of the recent true range. That is, you take the past 59 days' true range values and sort them from lowest to highest. The reason I use 59 is that the percentiles are easy to calculate. The n th value is the $n/60$ th percentile. For example, the lowest true range is the $1/60$ th percentile and the highest true range is the $59/60$ th percentile. The median is the middle value, the 30th.

The 90th percentile is the 54th value. So let's assume you want a stop that will only be hit 10 percent of the time and be missed 90 percent of the time. That's the 90th percentile, which is the 54th value in the list! If you're a little more gun-shy, take the 75th percentile, which is the 45th Value. If you're a real risk-lover, go for the 95th percentile, the 57th value. I think you want to use the true range rather than the high minus low because that accounts for overnight risk.

M. Edward Borasky <http://www.teleport.com/~znmeb>

A Purchase stop should apply only until the equity price rises above the purchase price. At that time, the Trailing stop should apply, and the Purchase stop should disappear. The Trailing (High) Stop should NOT apply until the equity price rises above the purchase price. I contend that, in Monacle, both the Purchase and High stops are applied at the time of purchase.

Consequently, if the equity goes down after purchase, the lesser of the two stops will determine the stop condition, and, hence, the performance of the portfolio. This can be easily be seen by using the Optimize function with any DAA system to simultaneously vary both the Purchase and High stops through a range, say 1 - 10. Plot the resulting portfolio Average Returns as follows:

Make a plot with Purchase Stop as the X-axis, and High stop as the Y-axis. Write down the value of the Avg. Return for each back test at the intersection of the applicable stops. Thus, for example, if the DAA returned 25%/yr using stops of $P=7$ and $H=8$, then write 25 at the intersection of 7 on the x axis and 8 on the Y axis. You won't have to fill in the entire grid before you will see a pattern. The result is that, for any given value of High Stop, the portfolio performance will vary for all values of Purchase Stop less than or equal to that of the High Stop, but will remain frozen thereafter at the value achieved when the High Stop is equal to or greater than the Purchase Stop.

I believe that this can happen only if both the High and Purchase stops are being applied together at the time of purchase. Thus, if you buy a fund and its NAV heads down after purchase, you will get stopped out at the value of the High stop, if it is less than or equal to the Purchase stop.

Rodger aroget@ix.netcom.com

Rodger - I believe that all your observations are correct - both purchase stop and trailing high stop are in effect at the time of purchase. The purchase stop remains fixed at the percentage below purchase for the entire period. The trailing stop rises as the NAV rises. Where I disagree is the statement that "A purchase stop should apply only until the equity price rises above the purchase price." - Why?? The next statement is also puzzling: "At that time, the Trailing stop should apply, and the Purchase stop should disappear". - Again why??? - If you buy at \$30.00 and set a Purchase stop of 4%, you want to sell if the NAV drops below \$28.80 (-4%). Suppose the price rose to \$32.00, Don't you want to protect yourself if price turns around and drops 4% below the purchase point? Why do you suggest that the purchase stop

should no longer be in effect if the price rises above the purchase??

However, many people put too much reliance in either stop loss option. More than 85% of the systems give better returns when both purchase and trailing high stops are set to Zero! That is "0". Waiting for the Cutoff about 2/3 of the way down the ranking often produces better returns, and lots fewer trades. Try it!!

Good luck - Howard Gadberry gadberry@sound.net

Money Management 6

Money Management:

It's something that most people spend very little time on. The most important aspect of trading is not sexy, exciting, or easy to describe, so who would want to spend time on it? Who cares if I have 8 losers in a row for \$500.00 each? It might only take a few trades to make back my \$4,000 and more.....

I would suggest a 1% parameter per trade. If you have a winning method, the only way you can lose is by running out of money. Why take the chance? Never risk more than 20% of your account on your total current trades (cumulative risk, remember, all of the trades you are in, can and at some time (!), will be losers)

Trade long term to cut down on the costs of slippage and commission. Roughly 20% of an average account is spent on those costs per year.

If you want to be more advanced, I would devise a sliding scale of initial risk that was quite small when the original starting capital is at risk and increases if one has profits over a self-chosen Mendosa line of acceptable returns. (ie At the beginning of the year or when down for the year while original capital is at risk, the risk would be . 5%. Profits between 1-10% would be risked at a 1% rate. Between 10-20% 2% etc. The numbers used are for example only.)

In a long term trading situation where the market often gets away from the stop creating unenviable situations, I suggest peeling off contracts, but never below 1, to smooth volatility. (i.e. \$100,000 account. Buy 5 Silver at 5.00 on the entry signal.

Original stop is 496, 1% risk. [$\$470,0 - \$471,0 = \$50$] At the close several weeks later the price is 600, but the stop has only moved up to 580. The account is now worth \$125,000, and the risk, close to stop, is \$22,500 or 18.0%. My 'peel off level' is 3%, this is higher than initial risk because it is dealing with open profits. I can risk \$3,750. The risk per contract is \$1,000; therefore, I can only have 3 contracts. I cover two.)

This will smooth volatility without adversely affecting returns in the long run. It will hurt returns in massively trending markets, which number one or two a year, but it will help returns on an 'average' move. It will cut the volatility by over 50%.

By combining the sliding scale of initial risk and a sliding peel off %, both per trade and depending on the initial risk, one will see that money management has much more to do with returns than entry exit decisions. However, the best money management in the world will not work if one's methods do not have an edge over the market.

Scot Billington scot.billington@nashville.com

Robert Buran Company bobburan@usa.net

Markets must move in such a manner so as to Frustrate, undermine and defeat the best interests of the majority of market players. According to this rule the majority cannot make money in the marketplace. The markets will totally ignore fundamentals if the majority of the market players act on those fundamentals.

Price movement is predominantly random, i.e. not 100% random, but predominantly random. The "secret" to making money in the market is locating that small portion of market behavior which is not random and exploiting it. I do not feel that conventional technical analysis is of any value in doing this. The problem with technical analysis is that it will present the illusion of uncovering hidden relationships between price behavior and various indicators.

I would submit that all such indicators are as random as the price behavior they attempt to predict and that all profits and losses realized from trading such indicators will be randomly distributed.

First law of price movement is:

If prices move up there is greater probability they will move higher rather than lower.

If prices move down there is greater probability that they will

move lower rather than higher.

Second law of price movement is:

If price goes up you must buy the market long and if price goes down you must sell the market short.

The problem is that when we look at the chart we want to buy low and sell high. You cannot, however, buy bottoms and sell tops. You can only follow a trend which has already been established through price movement in the same direction as the position you are taking.

You must understand that when you elect to buy long a market when price rises you are in effect buying the market at the worst possible price at the time of your entry. It's not going to feel good and it's not going to look good on the charts. But by "buying high" you are probably going to be placing yourself on the minority side of the market and therefore assuring yourself of profits.

Stop and Reverse method:

The stop and reverse method involves utilizing some kind of indicator or a price based on an indicator. If the system is long one contract and the market comes back and the price is hit the system sells 2 contracts and reverses to a short position and so on. Of all possible trading strategies I have found this to be the least profitable and grossly inefficient with respect to the use of margin. I will discuss margin efficiency in greater detail later but for now it need only be said that systems that are in the market all the time tie up your margin needlessly. Markets tend to move sideways about 85% of the time and consequently these systems will have your margin tied up doing absolutely nothing for at least 85% of the time. These systems can also whipsaw you to death while moving sideways.

Trailing Stop:

The second most common way mechanical systems take profits is through the use of a "trailing stop." The idea behind a trailing stop is that it allows you to "let your profits run" while at the same time "locking in" any profits you may have already made. My experience with system design and trailing stops has been that the trailing stop is at best a mediocre method of exiting a profitable position. The problem is that if the trailing stop is too

tight it results in your having your stop tagged right before the start of a big move. Conversely if your stop is too deep it results in many small profits going to large losses. The other problem I have with trailing stops is more theoretical. With a trailing stop you are trying to take profits only after the market has turned against you. Frequently you are forced to sell out your long position when many others are trying to sell too. You are then moving with the crowd and this is almost inevitably going to cause you excessive losses.

Therefore the rule I have developed with regard to taking profits is: *** You should try to take profits only when the market is moving strongly in your favor.

This is much more consistent with my contrary philosophy of trading. If you are long a market and the market takes off like a space ship you should sell. By doing so you put yourself on the minority side of the market selling to the majority of panicked buyers. That is how you make money in this game.

Bob Buran:

What should you do, however, if your position starts out bad, get worse and then threatens an uncontrolled hemorrhage of your account equity?

Unfortunately this happens with about 15 or 20% of our trades and our ability to keep these losses within a normal distribution pattern is what makes or breaks us as traders. This is a particularly critical issue if you are using Systems without stops on day of entry. Let me

assure you that you are utterly mad if you place no stop on day of entry. The day you enter a trade is the time you are most likely to be gored.

I originally experimented with using a money management stop strategy on my day of entry. If I were trading three coffee contracts and figured \$2500 was as much as I wanted to loose I would put a stop in about 220 points away from where I got in (1 Point = ¢166 to ¢167 = \$375 = ¢37500

$\$2500/3 = \$833/\text{Contract}$
 $\$250000/3 = \$83333,3/\text{Contract}$
 $\$83333,3/\$375 = 222 \text{ points}$

The problem was that on some days 220 points was far more than I should be risking and others 220 points wasn't enough. The market didn't really care about what Bob Buran was willing to risk.

Out of this frustration I developed a simple strategy that probably works better than anything I ever developed. If you are sick of always having your stops run, this simple strategy is going to be a big help. If you got into a trade based on a longer time frame such as a time frame based on daily data you need to develop a stop loss strategy that is based on a shorter time frame. For starters you should kick up an intra-day bar chart on your on line computer screen and set the bars to something like 3 to 10 minutes. If you are following our trading rules you are going to buy when the market goes up. This upward movement should create some kind of upward wave on the intra-day chart. You should measure this wave from its top to its bottom and if you are long the market you should place your stop at the point that represents a 75% retracement of that wave. If you are short the market you simply reverse the process. Hence my rule for placing your protective stop is:

Place your protective stop at a point that represents a 75% retracement (5/8 or 6/8) of the wave/move that got you in.

Here again you see why the "buying high" strategy doesn't sell systems. Buying point B (which is the high) looks like a terrible place to enter this market. Why not sell at point B? Or if we have to go long why didn't we buy at point L (which is the low)? Don't despair. Because you feel that way others will feel that way also and so they, the majority of market players, won't buy because it's too scary. The market in the best tradition of the "Rule of the Screw" will sense this hesitation by the timid majority and move much higher. That will encourage the timid majority and they will then jump into this market in a buying frenzy. At that time you will calmly sell your positions back to the frenzied majority and take your profits.

The point I'm making is that when you first get into these trades they seldom look good and you need to use the 75% retracement rule to place a stop so as to give yourself some peace of mind. If you go back and look at Figure 2 you can see how this stop was calculated. I measure from point L (low) to point H (high) and take 75% of that and subtract that from point H to determine the stop which is equivalent to the price shown at point SS (sell stop).

If you are an Elliot Wave purist you may notice that there are other smaller waves in figure 1. Try to keep it simple and try not to miss seeing the forest for the trees. I'm not an Elliot Wave

purist and what I do with a 3 to 10 minute chart is to measure from the highest high after your buy point has been hit to the lowest low on the screen.

Usually that is going to be the lowest low in the last day or two. That's what I mean by "the wave that got you in."

The Fibonacci Connection

Some of you sharper readers may at this point notice that maybe I might really just be playing around with Fibonacci ratios. Indeed what we are really saying when we elect to place a stop at "75% retracement of the wave that got you in" is that if the market fails to be supported at the $5/8$ or .618 Fibonacci retracement point, it becomes a "Fibonacci failure," a trend reversal and we need to get out of the way of a collapsing market. Believe me you are going to be very happy to be out of the market if these stops are hit and it will be very unusual for the market to "tag" these stops and then move higher. This is the most effective stop loss strategy we use.

Some of you technical analysts may at this point feel somewhat indicated. Here I am telling you first that technical analysis is a lot of baloney and then I turn right around and start using Fibonacci ratios for stop placement. Of course the ratio .618 wasn't invented by a technical analyst. It was known to ancient Greek and Egyptian mathematicians as the Golden Ratio or the Golden Mean and was used in the construction of the Parthenon and the Great Pyramid of Gizeh. Then again maybe I just like Leonardo Fibonacci because he never was a floor trader and never tried to sell me a seminar or a \$3,000 piece of trading software. In any case I confess to having almost obsessive fascination with Fibonacci expansion and retracement analysis. Nevertheless I don't think that at this time I have developed fully all my ideas regarding this. I am, however, giving you the most significant part of my work with these ratios.

Summary and Conclusions

These "laws" (If Prices move up there is greater probability they will move higher rather than lower; If prices move down there is greater probability that they will move lower rather than higher) are permanent, will not break down and cannot change in the future.

Once we have entered a trade based on these rules we will reject

traditional "stop and reverse" and "trailing stop" strategies of exiting our trade. Instead we will:
Take profits only when the market is moving strongly in our favor and place our protective stop at 75% retracement of the wave that got us in.

Some of you may at this point be ready to reject these market theories as being far too simple to be useful. Before you toss this manual in the trash, however, I want you to go back to the appendix and look at my equity curve for the past seven years. Look at the summary of my monthly profits from January 1, 1989 when I became fully automated, through June, 1991. Look at the consistent income and small drawdowns. How many gurus do you know who have included seven years of real-time trading records along with the materials they are selling?

I learned these rules in the marketplace and while attending the "School of Hard Knocks." On the surface they may seem simple, but implementing them in the marketplace is a more complicated process. Later in this course I will show you how you can consistently gain an edge on the markets and automate a trading system using these same simple rules. Using these strategies you need not fear that these basic rules will break down or stop working. They can't stop working anymore than Newton's Law of Gravity can stop working. I believe if we stop looking at all those wiggly lines, charts and complicated formulas and concentrate instead on simple up and down price movement we can beat the pants off the big boys. Call this back-to-the-basics trading or call it anything you like. I call it financial security.

Design a system that puts you in an average of 2 markets every day and never more than 5 markets. The drawdowns were extraordinarily small and the equity curve was amazingly smooth. Based on my testing I figured I could make about \$100,000 per year with a \$60,000 account.

Random Distribution of Profits and Losses, the Professionals' Nemesis

A system cannot know what the market is doing after entry. Your trade plan can. That is your edge. It is not second-guessing but intelligence-gathering upon entry. Systems may be giving you a signal again and again. Does this mean to add at every signal? Your trade plan must address that. I have liked the three add-on

points. Use your own ideas.

Don't draw any conclusions about a system (or indicator) on the basis of isolated examples. The only way you can determine if a system has any value is by testing it (without benefit of hindsight) over an extended time period for a broad range of markets.

Exits:

1. Exit at a target, i.e. a retest
2. Exit at a target, i.e. an expansion
3. Exit at a target, a fixed profit objective in dollars
4. Exit at a target, an objective chart point
5. Exit at a target, a subjective chart point
6. Exit at a time interval, 4 days
7. Exit at a combination profit time, first profitable open, 2nd profitable close.
8. Don't exit but just reverse
9. Exit on a range expansion
10. trail a stop off the low
11. trail a stop off the high
12. parabolic exit
13. Exit on close
14. exit if the day's close is less than 66% of the daily range in the direction you are trading

On backtesting, find the maximum profit on each entry before a reverse signal is triggered. Then use something like a standard deviation of maximum profits to find a probable profit range. Take profits on partial position when that profit target is hit, then run a trailing stop.

On stock system trades my first target is 2%, then a trailing stop of 62% of maximum move after 3 days. The system takes advantage of intermediate term swing moves (days to weeks), hopefully catching a few trends. I almost always get knocked out of trend moves, so am designing ways to re-enter the trend after being stopped out. The simplest is to re-enter when the high (for long) or low (for short) bar is taken out on close. Then I need a stop system on that re-entry.

-

A.J. Carisse carisse@brunnet.net

> This means taking smaller profits and not letting any get away from you, > it also does not mean trailing a stop because if you do, you will get an even smaller profit.

Not sure about that. This will get you out early too much. One of the difficult things to properly realize is that the performance of an instrument does not bear any relationship to your specific entry. By concentrating on its current characteristics in relation to your entry

point, your exits will suffer significantly. You must let the instrument tell you when it is time to exit. Simply put, this means - the point when you can calculate that your capital would be better off in cash or in something else. Patterns, ranges, and TA can give us valuable input to where this point is, but one thing's for sure, it has nothing to do with how little or much you've made so far on the trade. As far as moving stops go, at least this is relevant, but they are still somewhat arbitrary, and at best are an over generalization (i.e. always exiting on an X retracement without regard to the peculiarities between patterns).

This is a complex matter, and one's approach will vary according to what is traded and one's preferred style. However, there are a couple of principles that would apply universally. In all cases one should seek price confirmation for one's decisions. Ultimately, price patterns are king, and it is wise to at least wait for a reasonable indication that the trading is starting to go the wrong way. As well, while we need to spend a great deal of effort on trying to formulate efficient exit strategies, all this is wasted if we don't stick with whatever rules we have formulated. This isn't always easy in the heat of a trade, but I've found that more often than not, sticking to our well thought out plans will prove to be more profitable.

> So, what I am thinking is to exit when the trade is moving in your favor > and as long as you made money, be happy.

You'll be happier, though, if you can develop more efficient exits. In terms of risk, i've found that the old adage of giving your profitable trades a little more leeway (not too much of course) makes a lot of sense. It's important, though, that you consider the option of re-entry into your calculations, which is a tool that can allow you to tighten up your exits a little more while still capturing a large part of the bigger moves.

> I would like to hear from experienced traders on this philosophy. I have > had many times where I have had 500 profit into a trade and did not take > it only to have the trade fail to my stop. I am a one lot trader so it > is hard to scale in

and out.

I never let profitable trades go south. You need to tailor your exits a little more to performance, as for sure there isn't any way that one should go from a good profit to a good size loss. Having separate objectives is usually the main culprit here, as is setting your exit criteria too loosely. Ideally, an exit strategy should be totally removed from your entry, and just focus on the thing being traded. As simple example, let's say that you plan to exit whenever a set of MA's cross. So - either they cross, or you're still in the trade - regardless of your P/L at any point (which must be kept separate). This doesn't mean that objectives shouldn't be considered - but in terms of the instrument's performance, and not yours. For instance, if you can sense that a meaningful retracement is at hand, on the basis of its recent range of similar moves, and the price pattern suggests that it is underway, you could consider exiting, but this still has nothing to do with where you entered.

> I don't let 500 get away from me anymore, but then I am not letting > profits run either. I suppose a solution would be to build up the acct > with one lot and later use three lots to scale out and leave one on for the big pull.

I'm not a big fan of this approach, simply because the odds are either with the play or they aren't. Therefore, there is a right and wrong answer in terms of whether to hold or not, and the task is to try to determine which is the case. Whenever you focus on P/L, you will tend to be overcautious, and believe me, I've learned this the hard way. It is much better to focus exclusively on the present (the short term odds), while putting the past behind you (where you entered, and thus your current P/L), and letting the future take care of itself.

Regards, A.J.

Bill Shumake bshumake@our-town.com

The first is to always trade a fixed unit of contracts per money invested. In other words a person may decide to trade one contract for every \$50,000 of capital, in this way risk-of-ruin is always kept constant.

A second approach was suggested in which the number of contracts traded is increased after the second or third consecutive loss.

The idea being that if a trader has a system that say 60 % correct on average, after two consecutive losses the probability that the next trade will be a winner is about 84 % and if three consecutive losses occur the probability is 93.6 % that the next trade will produce a winning trade.

A third approach, which is simply a conservative variation of the second, is to only take trades after two or three consecutive losses occur. This is a very interesting approach which warrants investigation. It is based on the idea that all freely traded markets go through bases of accumulation/distribution and then an explosive trending move followed by another basing period followed by another explosive move. The money is made, of course, in the explosive moves. If you could isolate the explosive moves you would have the perfect system. This approach attempts to isolate these moves by waiting for two or three consecutive losses, which typically occur during a basing period, before a trade is taken. When a trade is taken, the odds of it catching a trending phase is increased.

With regards to strict money management ideas such as only risking 1% or 2% of total equity on any given trade, the reason I think you find so little written on the subject is that there is not much to write about. What I mean by that is that a trader has very little information to base money management decisions on. For example, a great deal has been written about money management with regards to playing blackjack. One reason is that a black-jack player has information about the odds of winning a given hand, information about exactly how much is at risk and information about exactly how much stands to be won on any given hand. This information allows the black-jack player to use money management systems that allow him to vary the size of the bet in order to maximize his ultimate winnings. Many people have tried to adopt similar strategies for trading. Unfortunately as traders we only have information regarding two areas; what our approximate odds are of winning a given trade, and how much we stand to lose if we do not win. Unlike the black-jack player, we have absolutely no information regarding how much we might win on any given trade, should it turn out to be a winner. (We have an idea of what the average winning trade has been in the past, but no information on any one specific trade in the future.) It is because of the lack of information on this one critical area, "how much will be won on this trade," that most money management systems deal only with putting a certain percentage of capital at risk. However, I believe this is

entirely adequate, because ultimately money management exists to do one thing; to make sure you have enough money to stay in the game and continue to trade until winnings offset losses and a profit is realized. If you have a system that is 60% accurate and limit your loss per trade to approximately 1% of total equity your probability of success approaches 100%.

Something else you should consider when thinking about money management and the idea of only risking 1% per trade is the psychological effect. As you no doubt know, one of the key elements to successful trading is being disciplined in applying the rules of your system over time. Those who can consistently apply their system usually win and those who cannot be consistent ultimately lose. Only risking 1% on any given trade means I can be wrong more than 50 times in a row and still have over half my original money. Place this in the context of a system that is 60% correct, where one might routinely be wrong only 4 or 5 time in a row and you can see that it makes trading a much less stressful endeavor and insures that it will never be difficult to pull the trigger on a trade. In other words it makes it easy to be disciplined and consistent with your trading strategy, which in turn guarantees your success. To give a real life example, I read the other day that Linda Raschke typically trades one contract per \$100,000. When I read this I thought back to when I was a young boy and my father would attempt to trade futures on a \$3000 account (he was never successful by the way). Can you imagine how much easier it must be for Linda Raschke to pull the trigger on the next trade after experiencing a loss than it was for my father when he had just experienced a loss. It is this psychological factor of money management that I personally believe is the most important. Remember, trading is only fun and worth the profits if you can sleep well at night. This is why I believe you see so much about risking only 1 or 2 percent per trade...it is very simple, and while it may not be the path to maximizing gains, it does insure that the trader will always be able take the next trade and apply his system with discipline and consistency. In short, risking only 1% per trade may not make financial sense but it does make Peace-of-mind sense, and in this business, peace of mind is itself a valuable commodity.

Jack Schwager: New Market Wizards:

- nothing else but Volatility can be measured

- when a bigger than daily average move occurs, there is a 55% chance of being followed by a similar directional move on the following day (probability edge is not sufficient after allowing for

slippage & commissions).

- 1 coin: 55% chance of landing on heads (i.e. odds of getting heads of a single coin is 55%)
- 9 coins: 62% chance of getting more heads than tails
- 99 coins: 75% chance of getting more heads than tails (binomial probability distribution)

- Fund:

Average Daily Volatility = 1% (1% change per day)

Annual Return = 20% approximately 54% of the days were up (135 of 250 days), 46% of the days were down (115 of 250 days)

Annual Return = -20% approximately 46% of the days were up, 54% of the days were down

- the worse slippage, the better the trade
- Fundamentals = funnyamentals (Ed Seykota)

Coin Toss:

Ted Juszczak tedj@net-link.net

In a system that is correct 50% of the time (which is typical of most trading indicators and flipping a coin too) strings of losers and winners will approach 15 in a row. In other words, if a coin is flipped 1000 times, probably (key word) at least once, heads will occur 15 times in a row, tails 15 times in a row also.

There will be even greater occurrences of 10 and 11 heads in a row, and numerous runs of 4 and 5. Very few indicators are better than a coin toss.

The same can be true of winning and losing trades. Those strings of losers will occur even more frequently in a system that has 40% winners. A winning system only needs bigger wins by a certain percentage. The probability of winning times the average win minus the probability of losing times the average loss just needs to be greater than zero to generate profits over time. A casino wins about 55% of the time

- they wired it into the rules of the game. With only a 5% edge, they can pay all of those employees, give away free drinks and meals, build lavish palaces and subsidize travel. The casinos in New Jersey alone, paid taxes on \$6 billion from the take on slots alone in recent years. Your broker and his colleagues in the pits get about 5% slippage and commission. If you use just about any indicator it's going to be "right" about 50% of the time, leaving you with a 45% system. You just have to make sure your average win is greater than your average loser, and not quit just because you started off with that string of 15 losers in a row.

1 - Trading constant size is riskier than increasing size. Indeed, as traders you have fixed costs, and you have to face unexpected events in trading and or life. Let's say you have

- a \$100.000 account to live off**
- a 100% return yearly**
- \$80.000 in living, tax and trading expenses yearly**

If you are trading constant size, you'll move only very slowly over the years out of your undercapitalized status.

If you are trading with a view to increase along the way, it may still take some time, but you will indeed take off.

Now if in two years you have to face a \$100.000 instant loss due to an accident, illness or something, which situation would you rather be in? The prospect of higher risk due to increased size, is also a prospect of lower exposure to unforeseen bankruptcy. I vote for the first.

2 - Increasing size is to be tested just as a system is. Sampling, back testing, forward testing etc. Check all ratios. Is your system displaying typical behaviors? Do winning streaks follow losing streaks, or are outcomes randomly distributed? What are your chances of having awiner after a winner? Two winners? etc. What are your chances of having a winning streak, after a losing one? A positive return after a negative one? Is their seasonality? Depending on the above, you may increase in %, in steps or according to immediate results, period etc.

3 - Consider trading as a losing game, hence play very conservative as long as your not in a winning position, find ways to be aggressive when you are. May be add along the way, or play much bigger in some circumstances.

4 - ABOVE ALL, BE ABSOLUTELY CONSISTENT. With money management, more than anything else, lack of consistency will totally ruin your best laid plans.

5 - Take out profits on a consistent basis, in a consistent way. Either you pull winnings, or you pull revenues, but decide once and for all and TEST, TEST TEST everything. These steps should account foreway over 50% of the time you spent on testing your system.

6 - Same for breaks, holidays etc.

7 - Test for capital accumulation. Your plan should allow self insurance. Remember, anything can happen, and you want to still be around tomorrow. Plan for the B scenario, your retirement, etc...

Then you may also look at system diversification, market diversification:

8 - I only trade individually working systems, which also work on a combined basis. Last thing I want is having all drawing down together all the time.

For some time I traded a group of 4 uncorrelated systems, two of which were underperformers, but very uncorrelated. Guess what, they "max drew down" all together, tripling a 15 year combined max drawdown (or over 20.000 combined trades tested).

9 - Know when to stop something that is not working. Just as for a single trade, your activity must have a stop, if things are not right (see 8 above).

10 - Market or product diversification: Again, each must stand its own test, and in combination. For me option writing works well with futures system trading combined. Make sure also, you have the means and resources to follow it all day in day out.

11 - Ideally, generate revenues elsewhere for basic living expenses. It is amazing how much this reduces your stress level, and increases your returns... But is difficult to implement.

Turtletrader:

Q1) How much capital do you place on each trade? Is this precise? Q2) When should you take a loss to avoid larger losses? Q3) If you begin a losing streak do you trade the same? What formula do you use? Q4) How should you prepare if trading both long and short positions? Q5) Is trading affected by commodities that move at different times? Q6) How is correlation handled in practical trading sense?

Q7) Should you have profit targets? Yes or No?

Q8) Does a portfolio of long and short allow one to trade more positions? Q9) How is your trading adjusted with accumulated new profits?

Q10) How are stops handled when volatility is a concern?

Q11) Is there a method to limit entry risk with options?

Q12) How does one prepare for unforeseen large scale trends?

Money Management questions (Ramon Barros

ramon@wr.com.au)

Q1) How much capital do you place on each trade? Is this precise?

Capital per trade is for me a function of my plan's edge, the market's volatility, and the correlation between the markets I trade. I use Gallacher's formula to determine this.

Q2) When should you take a loss to avoid larger losses?

This is a function of my trading plan.

The first element is my initial stop, placed where if hit I am wrong about the trade. Then the second step is, once I have a position, the market must act in accordance with the scenario for my trade - or - as the Phantom of the Pits puts in, the trade must prove that it is a winner.

Q3) If you begin a losing streak do you trade the same? What formula do you use? Measure a losing streak over the portfolio (not just one market at the time). I start to reduce numbers once a predetermined level is hit.

Again this is function of statistical data based on my trading history and the current volatility of the mkt.

Q4) How should you prepare if trading both long and short positions?

I'm not sure what this means. Do you mean holding back to back? If so, I don't engage in this practice. For me a long and short of the same position is the same as no position.

If you mean when do I stop and reverse? Again this is a function of my plan. If you mean some sort of spread strategy - I don't trade spreads.

Q5) Is trading affected by commodities that move at different times?

I trade only FX but keep an eye on Gold, Interest Rates and the Stock Market - using Intermarket Analysis to provide an overview of the longer term trends.

Q6) How is correlation handled in practical trading sense?

This is a function of the capital allocation formula I use.

Q7) Should you have profit targets? Yes or No?

I use the "rule of three" with profit objectives for the first 2

thirds. The last third looks to capture unexpected trends and is usually taken out by a trailing stop.

Q8) Does a portfolio of long and short allow one to trade more positions?

As above - I don't understand "portfolio of long and short..."

Q9) How is your trading adjusted with accumulated new profits?

Once I have made 30%, I add 15% to my capital base and apply the same strategy each 15% thereafter. Each financial year begins afresh.

This means after making 30%, 45%, 60%,... on each step you put 15% of the profit in your account. I want to ensure that I keep some of my profits. Also prevents the normal situation where a loss of 15% is a greater \$ amount than a 30% loss because of a rapid escalation of capital.

Q10) How are stops handled when volatility is a concern?

My stops are a function of the market's structure and volatility. If the volatility becomes unacceptable, then I take a trading holiday.

My stops are placed where if hit, I am wrong about the trade.

Most times I exit a trade before the stop gets hit. When I plan my trades, I plan for certain things occurring and if they don't, I exit.

POP (at

<http://www.futuresmag.com/library/phantom/phantom.html>)

puts it much better: "Assume a trade is wrong and has to prove itself within a specific period; if it doesn't exit."

Q11) Is there a method to limit entry risk with options?

I don't use options.

Q12) How does one prepare for unforeseen large scale trends? This is a function of last third of my contracts. What is the way to measure the Risk To Reward ratio ??

Really this question depends on a number of factors. I am going to make the following assumptions for this post:

1 you have a written trading plan

2 your plan contains a number of setups

3 you have historical data pertaining to your trades so that you can calculate the mean plus/minus one standard deviation for your profits.

4 you can also calculate the mean plus/minus one standard deviation for your losses.

5 you can calculate the number of trades that have made money

and the number that have lost. By dividing winning trades by the total number of trades, you will have the probability of success (PS).

6 you have at least 30 profitable and 30 losing trades from which to make the above calculations.

Once you have the data above, you can now calculate your RR.

The mean minus one standard deviation of your profits is the minimum profit you can expect to make 70% of the time (P); the mean plus one standard deviation is the maximum loss you can expect 70% of the time (L).

The formula for calculating the RR is:

$$(P \cdot PS) / (L \cdot (1 - PS))$$

e.g.

if your probability of success (PS) = 55% if your mean -1 std of profit (P) = \$1000.00 if your mean + 1 std of loss (L) = \$678.00

then your RR =

$$(1000 \cdot .55) / (678 \cdot .45) = 550 / 305 = 1.8$$

If you have enough trades, you can categorize them by mkts and setups.

You can also substitute the average profit for "mean - 1 std" for (P) and the average loss for "loss + 1 std" for (L). However, I believe that since the average represents a 50% occurrence, you are not putting the odds in your favour by doing this.

If you need to learn some basic stats and (like me) run at the mention of a maths formula, read "Statistics Without Tears" by Derek Rowntree. A great book in that it teaches basic stats without a single formula!! I believe all traders would improve their bottom line by understanding basic probability theory.

Note that the formula above says nothing about how many contracts you should take as this is a separate issue altogether. It merely states that given "x" contracts on your past results your RR, 70% of the time, will be "A".

The more volatile the market, the more likely that you will have a large move against you and therefore you should work with a tighter stop. However, there also is a contradictory approach that says that the more volatile the market, the more leeway you

should give it. What is right and what is wrong? I don't know. You simply have to try both methods and pick the one that you feel the most comfortable with and that matches your overall trading strategy.

The main movement in markets comes from people observing what others around them are doing and reacting to it. So there's a kind of dynamic interaction rather than a specific response identifiable with external news arrival.

It is the dynamic interaction between groups of market participants, who differ in their risk and reward objectives and in their trading time-frames, that is the key to explaining market behaviour.

The fact that some people trade at short time intervals with high risk for profit, while at the other end of the spectrum some trade infrequently at low risk for hedging purposes, creates a set of relative effects where groups react in different ways to events and then react to each other's reactions.

First off, there are many strategies that try and increase/decrease contracts as a function of the last x trades off of certain equity curve movement. The point that is important to keep in mind is that any strategy that relies on the last x trades is inferring that there is a dependency in the trading system.

For example, if you toss a coin 49 times and all 49 times you get heads, what do you think will happen on the 50th toss? If the coin is a fair coin, then regardless of the 49 tosses, the 50th toss still has a 50% chance of being heads and a 50% chance of being tails. In other words, the results of the previous 49 trials offers no useful information.

In looking at trading systems, one measure for assessing if you have a hidden dependency in your system is to do a statistical runs test, also known as a Z-test. Given the systems Z-score you can determine if you have a statistical dependence. If you don't (and most systems don't) then trying to trade based off of the last x -trades offers nothing to improve the system and perhaps even degrades the performance.

In an effort to try and control drawdown in a money management scheme I typically pay close attention to the systems historical largest loss on a single contract basis. If you can incorporate this largest loss in your money management model, you can usually maintain better control over drawdown. I prefer to use this number over say average loss, average trade, etc.

Neil Peplinski qa3135@email.mot.com

The best way is to start with a unit bet. Then it all depends on how the hands are streaking. If you are going to win, then you should increase your bet according to the Fibonacci sequence. Otherwise decrease your bet to the square root of the previous bet. This way you will be winning your large bets and losing your small bets. Some call it "locking in" your profits. Everyone knows that everytime you win a hand you are playing with the house's money - so keep betting more, you've got nothing to lose.

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Money Management 7

Money Management:

The best way to test this (an interesting experiment for your thesis) is to try a positive expectation game. Have 10 marbles 6 black (winners) 4 white (losers); randomly select and return the marbles 100 times. Have room full of people trying different money management systems starting with a hypothetical \$100,000; winning or loosing what they risk for each "trade". (Or record the sequence and do it yourself). The results will range from 0 to Millions. Try a 70% game. The results will also range from 0 to millions. This is why the worlds best and largest traders have very simple systems but sophisticated MM rules.

The best definition I've come across for MM is "how many". Your system should tell you when and where to get out, only after these decisions have been made should you then use your MM system to decide HOW MANY, but the two decisions should not over-lap.

You are right to try antimartingale systems, increase with wins, decrease with losses. The exact nature of the system determines the best formula. With wide stops like an n-day breakout, something like 2% is a good starting point, however this would be suicidal with close stops. A volatility based formula would stop be better to stop you getting too carried away.

> I also tried to increase/decrease position size according to the
> dependency among the last x trading days of a trade. When
there is a > Win-Lose-Win-Lose pattern I increase-decrease-

increase-decrease, when > there is a Win-Win-Win-Win pattern I increase continuously (e.g. every 5th > day). Also not very satisfactory.

> Am I on the right track but on the wrong branch?

Close.

Example 1: If your MM rules are to risk 2% of a \$100,000 account (\$2,000) Your system stop is \$1000 away so you take 2 positions. The market moves up and you have a \$4,000 profit but your system exit has not moved. You are now risking giving back 4% (\$4,000) If you want to keep a constant 2% risk you may consider reducing risk back to 2% and just selling one at the market.

Example 2: The same as above except your system has a reason (a technical one, not a MM one), to move up the exit stop. The new stop is risking only 1% now (\$1,000) so you could now double your position size a buy two more at the market. With this MM system you could increase dramatically your position size while never risking more than the original 2% to the market.

Example 2 is the basis of the very successful turtle trading system along with a very simple n-day channel breakout entry and exit system. There are many variations on this i.e. you could risk say 1% for initial positions and 4% marked to market or MARKET HEAT as it's sometimes called.

The idea is to limit risk and maximise profits by letting your tested technical system give you a reason to enter and exit the market, and MM to say "HOW MANY" but the two are quite separate decisions.

Andrew Dykes at "Kerry O'Connor" koad@ihug.co.nz Money Management/Expectancy/Expected Value:

> 1) I tried a very close system stop, e.g. a \$500 stop while Volatility (in > terms of a 15 day Average True Range) was higher than \$500 at least in 2/5 > of the cases. - I was surprised as the results were not too bad, as I could > "pack" more Nr. of Contracts with a close stops which obviously paid for > the higher number of stopped out positions.

> Do you consider such close stops as hazardous?

As long as your realise that this \$500 stop is not a money management rule but a trading rule. If you wish to include it in your system then by all means test it and see what it does to your

expectancy (!) ***. A MM rule does not alter your expectancy therefore is not at trading rule.

>

> 2) What I was thinking about is to have a recursive money management system. > That means I just look at what results a certain system produces, e.g. an > average loss of \$1000, an average profit of \$3000 and has tendency to win > big after a losing streak and vice versa (lose bigger after a winning streak).

I've not found this to be true to any meaningful extent. I would caution against trying use so called "streaks" to determine outcome. This is the very psychological bias that allows casinos to prosper. If you know the expectancy (!) *** of your system then every trade has the same expectancy going in, the actual result of any one trade is close to random. Also I've found the only way to have the "real world" trading to match up to your hypothetical expectancy is to trade multiple markets and use many years of data in your testing.

> Any ideas how to build the average loss/average profit into a money > management plan? - Unfortunately I never played Black Jack, otherwise I > would maybe have an idea.

> To know to suffer a loss in 60% of the time, and to have a profit in > 40% of the time is advantage (Expected Value = $60\% \times -\$1000 + 40\% \times \$3000 = > \$600$), but I am not quite sure how to implement it into a valid method.

To see how good a system is I like to then divide the expected value \$600 by the average loss ie $\$600/\$600 = 1$ Which means your expectancy is \$1.00 per dollar risked. This is a great way to compare different systems.

If the system has been tested properly with adequate slippage an expectancy of .5 is tradeable and .7 is a good one. An expectancy of 1.0 will make you rich!

Here is one plan, however the unfortunate truth is only with a large account can one truly use it or any effective MM plan,

Firstly I use my gambling formulas to determine maximum bet size for greatest return (unfortunately this will result in large drawdowns and you have to be psychologically prepared to trade through these.)

I use the Kelly Criterion. $\text{Kelly \%} = A - [(1-A)/B]$

{A is the % of winning trades in decimal format (reliability of system) and B is the average profitable trade in \$ divided by the average losing trade in \$

e.g. a coin flip game: the reliability of the system is 0.5. In this game you make twice what you risk when you win. Thus $B = 2$. Therefore the amount of remaining equity you should risk to produce the maximum rate of return is

$$\text{Kelly \%} = 0.5 - [1 - 0.5]/2 = 0.5 [0.5 / 2] = 0.5 - 0.25 = 0.25$$

The maximum bet then is 25%.

Now with this information I would take 80% of Kelly to be on the conservative side (20%) I then work out how many different markets I will be trading i.e. 10. So I would allocate 2% of my trading equity per position. If in this example my account is \$100,000. For each new position I would subtract my initial entry price from my exit price then determine "How many". I might be able to afford 4 corn (if the amount risked was \$500 or less) only 1 Swiss Franc and maybe have to forgo an S&P if the initial stop was further away than \$2000.

If I have on 10 positions and all of them go against me on one day I'm still within the Kelly Criterion. But I know the "how many" has not changed my expectancy (!) *** in any way.

> Is this what I call a recursive money management system? You decide AFTER a > trade what (rather 'how many') to risk next? This obviously requires > dependency between the trades. But I also read very often one should see > each trade independently, what a contradiction.

No, I have never seen any evidence of dependency between trades. A well thought out system should have the entry and exit point fixed before the trade is entered. The difference is your risk. The money management discussion "how many" is then based on your total account size.

> The problem I had (to transfer the experiences from the game to the futures > markets) was a) that I did not know if I should consider daily changes (daily settlement) as a streak or the last x closed out trades (which could be weeks away).

There are 3 basic approaches:

Core Equity Method: to use only the value of your account from closed out trades to determine positions size, less the amount

risked on each open position.

Total Equity Method: the cash in your account as above, plus the value of any open positions.

Reduced Total Equity Method: A combination of the two. It's like the core equity method but you add back open profits if the stop has been moved into profit.

> b) that I often increased risk when the market was already lost steam, so > big drawdowns were the result.

The only way to avoid this is to trade many un-correlated markets at once. The selection of your portfolio is crucial. (And not an easy task by any means).

> What do you mean by 2%? - Initial risk?

Yes 2-3% of your account size for the initial risk and maybe double that for market heat (Marked to market on the close). However this market heat should not mean moving your stops (this would change the expectancy (!) *** and would mean you are trading a different system) but by varying position size. This is of course the luxury of a large account and is not usually possible for the individual trader staring out. In fact it doesn't necessarily increase overall profitability but should produce a smoother equity curve, and cause less psychological problems.

I can't recommend highly enough the "Special Report on Money Management" by Van Tharp (I mentioned it in my last e-mail) which covers all of the above in great detail (different position sizing methods, different models of money management). > > For each new position I would subtract my initial entry price from my > > exitprice then determine "How many".

> You are probably talking about the stop loss (exit) point here or do you use target exits

> (at a profit)?

Yes stop loss exits. I never use profit targets. I always follow the basic cut losses short, let profits run. The reason this works is in the nature of distribution of the trades. There is not the classic bell shaped curve but one with "fat tails" i.e. there are more large moves than would be expected if they were random. By having an initial stop to prevent the unusually large adverse moves, and a trailing stop to attempt to capture as much of the extraordinary large moves, it is possible to profit in the long run.

As a result all profitable systems I've seen are trend following and have less than 50% win to loss ratios.

> Do you try to be in different markets all the time (i) or is it possible > that you trade only one at the time (ii)?

When I say I'm in the market this includes buy stop orders above the market or sell order below the market. I then "trade" about 35 market world-wide and would have open positions in about 60% of them at any one time.

It's all about having a positive expectancy then applying it as much as possible. As a blackjack player I used a system which had the odds of one player coming out ahead over a weekend to 2 out of 3. Two players together could, by combining banks effectively double the number of days and the probability of winning would be 3 out of 4. By the time we had a dozen players we won every day!

Trading is the same, the more markets the better. I would even add a market if I knew it was less profitable than the others (of course this is impossible to know in advance) because the smoother my equity curve the higher my bet size can be.

> If (i), you must have a very 'easy-going' Entry Signal, which gets you in > very often, otherwise you couldn't be in, let's say, 5 markets simultaneously.

As I said previously having an order in the market is the same to me as being in it. But don't be too worried about entries, it's a common beginners fallacy. It's the same as those "Lotto" type lotteries where you get to pick your own numbers (birthdays, lucky numbers etc..) Obviously as an educated Man you know this makes no difference to the outcome.

Entries are the same. If you don't believe me try using all the well known entry techniques, Channel breakout, moving average cross-overs, volatility entry etc and if they are profitable after 5,10,20 days few are even as good as random entry. They seem important because the decision when to get in is the last time a trader is in control. Exits are at the whim of the market. Only money management makes any real difference on your profitability.

> > Is this what I call a recursive money management system? You decide AFTER a > > trade what (rather 'how many') to risk next? This obviously requires > > dependency between the trades. But I also read very often one should see > > each trade independently, what a contradiction.

I know of no dependency between my trades. "How many" is a function of account size and the percentage you are willing to risk.

> Do you measure correlation among markets with the LN (Natural Log) of price > changes? What I even find difficult here is how do the programming efficiently (I do > all the calculations with MS Excel): I must have all the data (of all commodities involved)
> open to calculate a correlation matrix in a certain time window. This eats up all my > memory... Maybe I should calculate the correlations beforehand and write the > results into a separate file where it is read from during simulation? Danger is to 'lose > contact to reality' here. Which program do you use to run your calculations?

None of the above. I don't consider correlation among markets to be a mathematically problem, rather a common sense one. For example I'm currently short Swiss Franc Futures so I don't have a position in D-Marks. Just from looking at the charts of these markets they obviously move in a similar fashion. From experience I know to sell the weaker contract and buy the stronger. Grains and precious metals obviously have some correlation as do bonds and Euro's. S&P's have a negative correlation to bonds but not always. It is just a matter of paring down position size when you feel you may be over exposed to a particular sector. I know of no formular which improves on experience in this matter. I know this is not too helpful to an academic study of trading however the nature of market a forever changing. Oil and Gold moved together in 70's but by the 80's they were quite different.

The point to remember when testing a trading system, is that testing is not about accuracy or exactness. We only have last years data to test on when we really need next years! It would be similar to trying to find out who would win the next Austrian Elections by polling the French, i.e the wrong data pool.

To quote William Eckhart "The delicate tests that statisticians use to squeeze significance out of marginal data have no place in trading. We need blunt statistical instruments, robust techniques. I.e a robust statistical estimator is one that is not perturbed by mistaken assumptions about the nature of the distribution."

> I have heard about the fact that moving stops would change

the expectancy and varying

> position size will not. But what is the (mathematical) explanation of this?

> I do not really understand why a money management rule does not alter my > expectancy.

Your expectancy is per dollar risked. A 2-1 expectancy game does not change if the bet size changes.

> Is it correct that any additional rule which alters my expectancy (up or > down) is dangerous and should be avoided?

It is important not to have too many degrees of freedom. Do not use rules which would only affect a very rare occurrence. If I had to choose between two otherwise equal systems I would go for the one with the lesser number of inputs or degrees of freedom. This would be the one that would be less "curve fitted" and more likely to work in the future.

> I know the Kelly formula for quite a while but never tested it.

The Kelly formula should be used only for total portfolio risk. Assuming the worst case scenario and all positions act as one and move against you at the same time. It is much too large for an individual position.

> In practical terms, that means you decrease position size during the life of a trade instead

> of moving your stops closer, right?

Yes, although this depends on the system. The only way to know is to test all possible variations. Remember trading is as much psychological as mathematical. Overall profitability is irrelevant if the trader cannot stomach the drawdowns. So changing position size during the life of a trade is more to do with keeping a constant risk but doesn't necessarily increase profitability. If your exits are particularly clever it may be better to keep the bet size constant.

Andrew Dykes at "Kerry O'Connor" koad@ihug.co.nz
Fixed Ratio money management technique (Ryan Jones' company):

As you stated, Optimal F is the quickest way mathematically to increase your account balance. As you also noted, it comes at the expense of large drawdowns. Additionally, better systems will typically have larger Opt. F drawdowns because better systems

yield a higher optimal fraction, such that when a loss does occur, you have a large amount of your account at risk.

Ryan's "Fixed Ratio" money management formula looks to maintain the drawdown of an account at a constant percentage level. In other words you increase or decrease the number of contracts traded in order to keep your drawdown at roughly the same percentage level. This theoretically makes the account easier to trade because you don't have the wild equity swings associated with optimal f . This money management approach boosts account returns well above single contract trading, but still falls short of optimal f levels. It's just a matter of whether or not you could withstand (both psychologically and in regards to account capital) a 60% or 90% drawdown that is quite typical of optimal f .

I've purchased and worked with Performance I (Ryan Jones' software package for fixed ratio). At \$1200, the software leaves something to be desired (pretty much a glorified spreadsheet) although a new version was just released (free to current owners). Basically what you're paying for is the concept, which is fully disclosed. Bottom line: Fixed Ratio is unique, but not stellar. I believe if you study Vince's material (opt. f) and Kelly's techniques and fixed fractional trading and get an understanding of how money management works, you could probably come up with an approach that works just as well as Fixed Ratio. If you're looking for someplace to spend money, however, this is as good a place as any!

Neil Peplinski qa3135@email.mot.com

Never risk more than one days range. In general, it is preferable to exit in the direction that the market is going I believe. I am also interested in this type of discussion, because I have a great entry technique and am more interested now in a great exit technique. Most trading systems expound on great entries but ignore how to have great exits. Many Gurus recommend scaling out of trades in order to cut down risk. Finally, when the risk is greatly reduced and some profits are protected, a final contract is left to go for the big long home run. The first few contracts are taken off at targets, and the final one is let run with a loosely trailing stop.

For small accounts, a profit target is probably preferable for short term systems and a trailing stop is preferable for long term systems. The system that I am trading allows your profits to run

for one day, and then you nail them the next day. If the market keeps going in your favor, you reenter. The system skips a lot of profit between where you took profits and reenter. I am thinking about how to fill the gap.

Money Management-Van Tharp:

Long trades have a high positive expectancy but make you money only 25% of the time. When the market starts up trending (winning streak on the long side), the probability of it continuing is about 70%. A winning trade could last 15 days or more, and (if you risk the maximum allowed) you could double your equity each day. Thus, a winning trade that was allowed to double each day for 15 days could pay more than 16,000 to 1. However, if it didn't go 16 days, you would lose all of your profits. For more information on expectancy or probabilities, see the questions and answers below and Dr. Tharp's comments on money management.

Short trades have a negative expectancy but they make money for you 75% of the time. However, you could loose up to 20 times the amount you risked. Thus, any time you risk more than 5% of your equity on the short side you risk bankruptcy. A losing trade only

lasts one day, but a winning trade can go as long as 15 days and as short as two days. The art form to winning this game is to be able to capture as much profit as possible from a winning trade while, at the same time, not letting the profit get away. For example, if a winning trade went 15 days, you could make as much as 16,000 times your initial risk if you continually risked the maximum. But, if you continually risk as much as possible on a

winning trade, you will eventually lose all of your profits.

All trades are not necessarily 1:1. The market can move in your favor or against you at 1:1, 2:1, 5:1, and even as much as 20:1 on the short side. There are occasional 2:1 losses on the long side.

During the course of play, each player has a listing of the last 10 trades they placed. Here is how to interpret some of the columns:

Risk - the amount risked during the trade

L/S - indicates whether the player traded on the Long side or the Short side
Mkt - indicates the market movement:

Up = a win on the long side or a loss on the short side

Down = a loss on the long side or a win on the short side

Chg - indicates the amount the market moved
Close - your closing equity (Equity + Amount)

YOUR LAST 10 TRADES

Date Equity Item Traded Risk L/S Mkt Chg Amount Close

06/12/1996	50000	Ethiopean Rice	00500	L	DN	01	-00500	49500
06/25/1996	49500	ABC Shoes	00880	L	DN	01	-00880	48620
07/03/1996	48620	Monitors Inc	00200	L	UP	02	+00400	49020
08/28/1996	49020	Monitors Inc	00200	S	UP	01	-00200	48820
09/01/1996	48820	Manual Trans	00200	S	DN	01	+00200	49020
09/04/1996	49020	Cups Mugs Inc	01000	L	DN	02	-02000	47020

Thus, if you risked \$1000 on the long side, as it did with "Cups Mugs Inc." and the market moved down by 2 times, then you would end up losing \$2000.

If a player elects to "go short" and the market enters a long winning trade, you won't be permitted to participate (except by going short) until a loss occurs and a new item is presented. The reason for this is that we are simulating the whole issue of allowing profits to run, but not letting them get away from you. By going short, you have elected not to participate in that particular trade. Remember that a winning long trade can last many days. Thus, when you go short, you may be locked out of the game (except to go short again) for a number of days.

Only one stock or commodity is traded per day. During a winning streak, the stock or commodity being traded remains the same from one day to the next. Once a loss occurs, a new stock or commodity is offered. During the winning streak, you can risk a maximum of your initial trade on that item plus any profits you have realized since the item was offered. If you risk \$0 on the long side, you will not be able to participate in a winning trade because the amount you can risk is limited to \$0 throughout the trade.

Players that are unable to return to the Virtual Trading Exchange daily are letting their profits ride (once they have some) just like in the real markets. However, we do have an error in the logic of the game in that program only lets your profits ride during the second day of your participation in a winning streak, but not after that. In fact, if you let your profits ride, by not participating, you risk getting the results of the trade on the day

you return (instead of the next day). We will not fix errors of this type, so you are on your own if you try it. You need to take this into consideration when considering your money management prior to placing your last trade, and then place the trade accordingly. You can also decide to place a "stop" in the market by entering a "0" as your last trade, effectively preserving your capital.

There may be circumstances where you will notice two trades listed on a single day. This tells you that the exchange automatically executed your trade at the end of a winning streak (which would have occurred during one of the days which you were not participating but had a trade on) before switching to a new item. By not participating, you were letting your profits ride. This is the only circumstance which will cause two trades to be listed on the same day.

When a winning trade starts, it may last as long as a week or two. It is considered to be just one trade. If you elected to take it on the short side or risk \$0 on the long side, you have essentially decided not to participate in that trade on the long side. However, you can make more short entries on that trade - should you decide that the winning streak should be over. Your risk on the short side is only 1:1, but remember that a winning trade can last a long time.

There is a lot of uncertainty in the markets, just like there is a lot of uncertainty in the game. In other instructions, we say that certain things will probably happen. However, nothing is certain. And if the unexpected happens, it is your problem. We will not resolve such problems in your favor. It's one of the hazards of trading.

How to Play the Simulation:

The best way to describe how to play the simulation is to take you through a series of trades to see what will happen. The names of the stocks or commodities used in this example are purely fictitious - any resemblance to actual companies is purely coincidental.

Let's say that the first trade is MicroLoft, Inc. On day 1 you place a trade for \$1,000 on the long side. The next day, you look to see what happened in the market and find that the market moved against you at 1:1 and you've lost the \$1,000 (if

you had gone on the short side, you would have won).

TIP: Each day, the market switches instruments unless there is a profit on the long side.

Now, on day 2 everyone is trading on Gold. You place a trade for \$1,000 on the long side. The next day, you look to see what happened in the market and find that the market moved against you again, this time at 2:1 and you've lost the \$2,000 (if you had gone on the short side, you would have won again).

On day 3, everyone is trading Silver. Again, you place a trade for \$1,000 on the long side. The next day, you look to see what happened in the market and find that the market moved against you again, at 1:1 and you've lost another \$1,000.

Your new equity is now \$46,000. If you had gone on the short side for all three trades, your new equity would have been \$54,000.

On day 4, everyone is trading WXYZ Corp. Again, you place a trade for \$1,000 on the long side. The next day, you look to see what happened in the market and find that the market moved in your favor at 1:1, and you've now won \$1,000. However, if you had decided to go short on day 4, you would have lost at 5:1, or \$5,000, and would not be permitted to trade on the long side until a new instrument is offered.

TIP: When there is a win on the long side, the short side can lose anything from 1:1 to 20:1. Once the market enters an up trend, it enters a new mode of play. WXYZ Corp. is now trending up. It will remain the instrument offered as long as it remains in the up trend

(i.e.: until the first loss). Subsequent, days are just a test for you (those of you who've made money on the long side) to be able to let your profits run, but also lock in some of the profits by raising your stop (i.e., not risking the maximum).

On day 5, WXYZ Corp is still being traded. Your decision now is whether to risk all your winnings or to raise your stops. You decide to trade \$2,000 on the long side. The next day you look and find the market is still up trending and you have won at 1:1, or \$2,000. You have now made \$3,000 on this trade!

On day 6, WXYZ Corp is still being traded. You decide to transfer

\$500 into your equity by only trading \$2,500 today. The next day, you look to see what happened in the market and find that it moved in your favor, and you won \$2,500.

Your new equity is now \$51,500 with \$5,000 to risk.

On day 7, WXYZ Corp is still being traded. You decide to move an additional \$1000 into your equity account by only trading \$4,000 today. The next day, you look to see what happened in the market and find that it moved in your favor, and you won \$4,000.

Your new equity is now \$55,500 with \$8,000 to risk.

On day 8, WXYZ Corp is still being traded. You decide to only risk \$2,000 on the trade. The next day, you look to see what happened in the market and find that it moved against you, at 1:1. This trade is now concluded and you have \$53,500 in equity. You've made a total of \$7,500 on WXYZ.

On day 9, Arizona Oceanfronts is being traded and the entire process begins again.

It pays to cut your losses short and to let your profits run. You do this by implementing good money management techniques. Our simulation has been designed to provide you interactive feedback during the course of play. The simulator has been programmed with a set of rules. If it senses that you are trading in a highly risky manner, you will receive an instructional email message to help you out.

Questions & Answers:

I don't have access to the internet over the weekends. Why does the simulation run continuously?

The simulation runs continuously by design. During the design phase, we considered the problem that some people that may only have internet access at their office during "regular business hours". However, our simulation is being played by people all over the world in various time zones, thus it was impossible for us to define what "regular business hours" would be for each player.

Furthermore, the goal of the Virtual Trading Exchange is to teach people money management skills. People need to learn to consciously consider their money management strategies each time they place a trade. Thus, if a member is unable to participate over a weekend, holiday, business trip or any other time, then they need to consider this when deciding how much to risk on the last day that they are able to participate. Their money management should tell them to either reduce the amount they are willing to risk on the trade or to place their trade on hold by placing a stop in the market (entering a "0") as their last trade.

This game seems like gambling, not trading, to me. You'll even lose on long trades most of the time. What am I suppose to learn?

It's not gambling because, unlike the casinos, the game has been programmed to give you a positive expectancy if you go long on every trade. It is actually a good simulation of long-term position trading. The losses only last a day and you've got to let your profits run. You also have to learn to make sure that your profits don't get away from you. Thus, if you play the game well, you'll learn the lessons necessary to be a good long-term trader/investor.

I don't have a lot of information about any particular stock or commodity that you give. How am I suppose to make a decision?

Actually, taking every trade in this simulation is a little like following a system. You don't know which trades will make money, but you know that you will make money if you take them all and manage your money well. You also know that you have a positive expectancy by trading on the long side.

The key to making money in the markets is money management. That is what we are emphasizing in this game. Most people think that the key to success is analyzing the market and finding the next winner. That's why most people have a lot of trouble making money. We're trying to teach you how to make money in the markets through money management. Hopefully, you'll be open to learning about it.

How can I make a decision on this trade (it could be any one) when I can't see a chart of it?

The answer to this question is again the same as the last one. Follow the expectancy and go long. The key to this game is

money management (how much to risk) and how much to continue to ride on a trade during a winning streak. Going long or short shouldn't be a part of your decision making. However, we allow you that option because most people like to make stupid mistakes.

Why not give us a portfolio to trade? A portfolio would be useful, but our goal with this simulation is to teach you money management. That's easier to do when you only have one item to concentrate on. We want to make the lessons simple and easy for everyone to understand.

What's a good strategy to use in this game?

We don't want to give one strategy and have everyone play that. However, we will give you some general hints:

Trade a percentage of your equity on each trade --- enough to do well, but not so much that you'll get too far "in the hole". You might consider increasing the percentage when you are ahead and decreasing the percentage of equity when you are behind.

When the market is up trending (a winning streak on the long side), conserve some of your profits. One method is by protecting a fixed percentage of your profits (which is like using a trailing stop in the market). When the market starts up trending, you may only protect a small percentage at first, but as the trend continues, protect more of your profits. One way you might trail stops (and there are many) would be to trade 80% of the maximum on day 2; 60% of the maximum on day 3; 40% on day 4; and 20% on day 5 onward. However, you can do any number of possibilities in terms of protecting your stops. For example, if you risked 100% of what's possible on days 2 and 3 of a winning streak, you'd risk losing it all, but you'd have an 8:1 $(2^3) = (((1/0,25)^3)^{0,5}) = (((1/0,25)^{(3*0,5)})$ winner after three straight winning days. If you risked the maximum in a trade that went ten days, you would have a 512 $(2^9) (((1/0,25)^9)^{0,5})$ to one winner. However, in order to get that profit, you would have to risk all of your profits on days 2 through 10 - which is probably not a wise decision.

Incidentally, you can determine how much you are allowed to bet during a winning streak by risking your total equity. The computer will reject the trade and telling you how much you can risk. You can then elect to trade a percentage of that figure.

I am having trouble reconciling the following statements: Long trades have a high positive expectancy but make you money only 25% of the time. Short trades have a negative expectancy but they make money for you 75% of the time. How can you have positive expectancy with only a 25% success rate, but negative expectancy with a 75% success rate?

Expectancy is a function of both the probability of winning and the size of the average gain to the average loss. For example, imagine having a bag of marbles in which there are 99 black and one white. The 99 black ones will cause you to lose whatever you risk. The one white one will pay off 1,000 times what you risk. Each marble is replaced in the bag after it is drawn out. Thus, on any given trial, you only have a 1% chance of winning, but a great positive expectancy. I'd play that game all day, but you must be in the game to capture the 1000 to one marble. $[1000 * 1\% - 1 * 99\% = 10 - 0,99 = 9,01]$

Most people don't understand expectancy, so that's why we do it that way. To understand expectancy better I'd suggest that you either subscribe to our Market Mastery newsletter or purchase our Money Management Report. Also see the expectancy section of this web site.

When you say that their are only 25% winning trades, please look at the following scenario and tell me if there are 25% winning trades.

Gold Loss

ABC Stores Loss Golf Shoes Win Golf Shoes Win Golf Shoes Loss
Copper Loss

Would you agree that there are only four trades there three losses and one winner that eventually loses. Thus, the winning percentage is 25%.

Yes, that is correct. There are three losing trades -- gold, ABC Stores, and Copper -and one winning trade -- Golf Shoes. Thus, there are 25% winning trades.

Be looked at the trials in this game, and there is no positive expectancy. Your engineers need to re-program this thing.

I agree that we have some bugs in the program. The biggest bug is that it doesn't force you to let your profits run beyond the second trial of a winning streak. However, you have to take

advantage of those streaks (by letting your profits run) and you can't keep betting it all (which means you have to raise your stop). When you do that there are some big winners. For example, there was a potential 96:1 winner on the long side in one of the last two games (see below). Not one person took advantage of it. In addition, the random generation has not had any really big winning streaks in the past, but there is a good chance of one in the future.

There is only a positive expectancy on the long side when you allow your profits to run. For example, a good strategy after a win might be to risk 80% of the maximum on the second bet of a win streak; 70% of the maximum on the third trial; 50% of the maximum on the fourth trial; 30 % of the maximum on the fifth trial and 20% thereafter. If the streak, only starts out with a one to one winner, might not want to risk more than 50% on the next trial.

In the last game, there was one trial that started out as a five to one winner. If you had risked a thousand on the first trial and let the whole winnings go for the five winning trials, you would have made \$96,000. But let's say you did something like the following:

Trial Risk Amount Won New max. risk

1	\$1,000	\$5,000	\$6,000
2	\$5,000	\$5,000	\$11,000
3	\$7,000	\$7,000	\$18,000
4	\$9,000	\$9,000	\$27,000
5	\$8,000	\$8,000	\$35,000
6	\$6,000	(\$6,000)	\$29,000 (Total Gain)

Look what happens, you make \$29,000 out of that streak on an initial risk of \$1,000. That's almost a 30 to 1 gain. Even if you left your risk at the initial win of \$5,000, you would still have made 20:1. However, no one was willing to do that. And, of course, no game has a positive expectancy if you don't play the big marbles. Remember that the core risk on this trade - the risk to your core equity - was never more than \$1,000.

During the rest of it, you were just risking open profits.

Some winning trades pay 5:1, others pay 2:1, and others pay 1:1. What is the distribution of those trades? Also some long trades lose at 5:1, 2:1, and 1:1. What is the distribution of those?

If we've programmed things correctly for the current game

(beginning September 21st 1997), the long trades can only win or lose at 1 to 1, with an occasional 2:1 loser on the first trade only. (There has already been one exception to this on November 7th). The way you'll make a lot of money is to be able to as much as double your capital everyday by riding a winning streak 10 to 15 days. But of course, if you continually double your risk, you'll eventually lose it all. You have to lock in some of your profits, just like you would with a stop order in the market.

I have made some simulated runs assuming a 25% chance of a winner being long and a 70% chance of a winner continuing the next day. I also assumed that a long wins and loses by 1:1 each day. I'm betting a constant size on each day, and stay with the initial bet during the whole long trade if it trends. The bet size is \$500. I recorded 100 runs and found out on the average one breaks even. To conclude, your rules don't give a positive expectancy on the long side.

The long trade is one trade. Your initial risk might be \$500, but you can risk \$1,000 on day two, \$2,000 on day three, \$4,000 on day 3, \$8,000 on day four etc. By day 14, you could risk as much as \$446,000. Your core equity risk would still only be \$500 since it is the same trade. Please understand that -- if ABC Stores wins for 8 straight days it is still only one trade. You can let profits ride in a trade. That's what is wrong with your calculations. Money management determines how much you risk initially. But money management also controls your position size during the trade. The golden rule of trading is let your profits run.

You need to lock in some of your profits. Otherwise, you'll eventually lose your core equity risk and all your accumulated profits in that trade), but you could theoretically make 16,384 to 1 on the initial risk of a trade that goes 15 days. A trade that goes 15 days is not that probably, but some big winners are.

What if I haven't played for a few days, how do I know if we're in a winning trade or not? And if we are in a winning trade, can I jump into the middle?

There is no way that you can know if we are in a winning trade or not if you've been away for a few days. However, the odds are much greater than the 25% that we will be in one if you've been away for a while. Yes, you can jump right in. Just realize

that if it is already going, it might not last that much longer.

I've been following the winners and number 26 appeared to go short and then go back in on the long side. The rules say that cannot be done and I haven't been able to do it. What gives?

That's a great question and it illustrates how one of the quirks in the game, previously given in the instructions, works. When you leave the game for a period of time, the computer does not process your trade until you return. If the trade is no longer in a winning streak when you return, it will be counted as a loser (even those it would have been a winner had you played the next day. Here's what happened with number 26.

11/06/1997, 0190815,Viper Technologies , 0001120, L, W, 01, 0001120, 0191935,

11/06/1997, 0191935,Viper Technologies , 0002240, L, L, 01, -002240, 0189695,

11/09/1997, 0189695,Basket Ball Inc , 0001000, L, W, 01, 000 1000, 0190695,

Viper Technologies did not actually have a losing day until 12/7. However, #25 made a trade on 11/6 and then did not return until 11/9. Since the 11/6 trade had not been resolved, it was declared a winner, but the next trade was carried over and lost at double the best size. As a result, it might have looked like #26 really went short on 11/8 in Basket Ball Inc.. But was really happened was that several trading days were skipped.

If you look at what people are doing with money management in this game, it is really atrocious. First, if you want to get into the top 10 in any of the first three games you could probably bet \$50 long on every trade and make it. Sometimes there are only 10 profitable people in a game (aside from our staff members and people who are cheating and playing two accounts at one time), and you get into the top ten if you make \$500. Most of you want to get into the top ten immediately. Resist that temptation and just follow your discipline. Most of the people in the top 10 end up doing something foolish and then falling behind. Be patient. Most of you give into the temptation to bet with the probability and you do so big time. Several people risked everything on the first trial and went bankrupt. If you risk more than 5% on the short side on any trial, you risk bankruptcy.

Percentage risk and percentage return do not have a symmetric effect on the portfolio, because the required percentage return to recoup a given loss (in percent) increases geometrically with the size of the loss. Not adjusting the trading size to the portfolio value (by decreasing with greater risk) would lead to an increase of risk at an increasing rate (as expressed by the increasing leverage of a fixed-size trading position).

The process of translating portfolio risk into number of units traded, under given price risk estimates, is shown here using a T-Bond position as an example.

**Example A: Proposed LONG position in US T-Bonds at 100
(Unit Face Value US\$ 100,000)**

Estimated (Accepted) Price Risk: 2%

Allocated Equity to this trade: US\$ 1,000,000

Accepted Portfolio Risk on Position: 1.5%

Calculating Accepted Position Risk in absolute US\$ = $(1,000,000 * 1.5\%) = 15,000$ Calculating Accepted Per Unit Risk in absolute US\$ = $(100,000 * 2\%) = 2,000$

Accepted size of the trading position = $15,000 / 2,000 = 7.5$ units of T-Bonds at face value US\$ 100,000 equalling a US\$ 750,000 investment. If contract sizes do not permit the exact trade size as calculated, we mostly round down to the lower possible trading size (lower risk), here, a US\$ 700,000 investment.

**Example B: Actual Market Price is now at 101 (up from 100)
System calculates price risk to be 3% (up from 2%).**

Allocated equity now at US\$ 800,000 (due to losses in other markets within the portfolio)

Accepted Portfolio Risk unchanged at 1.5%

Calculating Accepted Position Risk in absolute US\$ = $(800,000 * 1.5\%) = 12,000$ Calculating Accepted Per Unit Risk in absolute US\$ = $(101,000 * 3\%) = 3,030$

Calculated accepted position size = $12,000 / 3,030 = 3.96$ units of T-Bonds (at face value US\$ 100,000), rounded up to 4 units, equals accepted position size of US\$ 400,000. The system will therefore issue a signal to sell US\$ 300,000 worth of TBonds in order to adjust the position to changes in the price risk and in the portfolio composition, expressed in the lower portfolio allocation.

CAPITALIZATION

Capitalization (actually, the lack thereof) is perhaps the most overlooked, misunderstood, and MAIN reason why so many traders starting out fail to achieve their goals. They go into their new business without an adequate supply of a traders lifeblood: CAPITAL. Think of yourself as a general or field marshal. You are fighting a war. If the war goes badly at first and your opening battles all end in defeat, then you must have adequate reserves to carry on the struggle until you emerge victorious. You lose all your soldiers, guess what? YOU LOSE!!! A general can not hope to fight a successful campaign without enough soldiers in his army. A trader can not trade his account properly if financial armageddon rides upon every trade.

YOU MUST BE SUFFICIENTLY CAPITALIZED! IF YOU ARE NOT YOU ARE DOOMED TO FAILURE FROM THE BEGINNING!
THE RULE OF 4.5

What then is sufficient capital to begin trading the S&P/DJ? As a common sense guideline I have developed a simple and straightforward method to determine what your MINIMUM account balance should be to open your account and begin trading. I call this THE RULE OF 4.5. Simply put, you can NOT risk more than 4.5% of your total equity on any single trade. This gives you the advantage of being able to lose 20 times in a row without having your account wiped out. (If you do lose 20 times in a row I want you to do 2 things: 1) Realize that you were not meant to be a trader. 2) Send me your methodology so I can fade it).

All kidding aside, there is something known as LUCK and STREAKS. If you begin trading 2 S&P contracts with \$5000 and run into a bad streak (say 4 out of 5 losers for a loss of \$2500) at the very start, you are going to seriously think about quitting right away! Thats a 50% drawdown in equity in a very short period of time...maybe even ONE day! It will be very difficult from a psychological standpoint to trade properly after that or have confidence in your abilities. Yet if you were properly capitalized you would have only suffered a %12 drawdown on those S&P contracts, not nice, but you can dig in your heels and continue the fight!

Below is a simple table to determine what your MINIMUM opening account balance should be based upon the Rule of 4.5. The amount of the contracts varies based upon the account

balance. Remember: you must always begin with TWO contracts at a minimum, or you do not stand a ghost of a chance to be profitable.

OPENING ACCOUNT EQUITY: 7000 10000 13000 16000 # Dow Jones (DJ) you can trade: 2 3 4 5

OPENING ACCOUNT EQUITY: 20000 30000 40000 # S&P 500 you can trade: 2 3 4

If you stick to the above table, and do not deviate from it (and for goodness sakes, if you do deviate, do so on the side of caution), then you have an excellent chance of making money. If you disregard this advice, you do so at your own peril! THIS MAY WELL BE THE SINGLE MOST IMPORTANT ADVICE I AM GIVING YOU. IF YOU LEARN NOTHING ELSE, THEN LEARN THIS.

Money Management 8

Money Management

An essential element to success in trading is ignored in almost all trading or market timing books or articles. It's surprising given its importance that very few writers devote any time to the discussion of money management practices and principles. This chapter will present one approach to money management that is general and could be easily supplemented by other methods if you desire. The goal here is to provide recommendations for a simple, viable approach to allocating funds and managing your portfolio.

This book is not intended to include a course on money management. However, if there is one subject within the realm of trading that is vital to a trader's financial survival and at the same time totally overlooked as critical, it is the discipline of money management as it applies to trading success. If market indicators and systems were always precise in identifying tops and bottoms, the necessity for prudent money management skills would not exist.

Unfortunately, such is not the case. Even if a system were 99 percent accurate, the 1 percent failure rate could conceivably wipe out a trader who did not apply money management methodology. The following techniques for your consideration in designing a prudent and viable money management program may appear simplistic upon first glance. However, making procedures complex serves only to obfuscate the obvious, easy,

and straightforward approach to sound money management. These recommendations regarding the design of a money management methodology are a compilation of various techniques I have developed and employed successfully throughout the years.

Before you enter any trade, you should be convinced that the trading event will prove to be profitable. Otherwise, why even attempt the trade? Obviously, no decision in life is always correct and this applies invariably to the markets. In the case of the markets, however, you are not able to undo a bad decision and recover your losses from a trade.

This lesson came early in my career. Discretionary decisions or trading hunches or guesses may prove profitable on occasion, but how do you quantify and duplicate this decisionmaking process in the future? Consequently, the following suggestions are directed not only toward developing -a series of mechanical, objective approaches to trading decisions and money management but also to enable you to replicate your decision-making process regardless of the time period and the number of markets followed. The primary considerations are consistency, objectivity, and portability. Additionally, you need to be sensitive to diversification of market timing techniques, as well as markets monitored. By implementing a number of unrelated methods, you will be able to sufficiently diversify your portfolio and thereby reduce your level of risk. In other words, by applying a combination of market timing approaches, each of which uses a different trading philosophy, you will be able to operate as if you had a number of trading advisors managing your funds. Obviously, these techniques should be applied on paper before introducing them real time into your trading regimen. Once the techniques have been sufficiently tested to ensure performance results and nuances, the money management disciplines must be introduced. The other chapters of the book pertain to the methodologies, so this discussion is devoted to a basic approach of managing trades and your investment. First, you should allocate percentages of capital equally to various mechanical market timing models. Therefore, if you have developed and decided to use three noncorrelated mechanical approaches, then you should designate the same percentage participation to each. You may choose to vary this approach. For example, if one system is two times more effective than another, then you would double by position size or if the frequency of trading for one method is twice as active as another technique, you may wish to reduce portfolio commitment by 50 percent.

However, for sake of discussion, assume that all systems are equally effective. Assuming a total of 100 percent, you may not wish to allocate in total more than 30 percent to these systems collectively at any one time. Also assume for purposes of simplicity that you have elected to follow 10 individual markets for each system. Consequently, your maximum exposure would be no greater than 30 percent of your beginning equity, and that is only if each model has its maximum investment exposure of 10 markets at any one time and each market is being traded simultaneously at the same time (10 markets times 3 trading methods times 1 percent apiece equals 30 percent exposure). How are you to measure your investment commitment in terms of number of futures contracts, for example? Rather than subscribe to an esoteric portfolio management methodology with numerous complicated variables connected by advanced statistical formulas, you should rely on the market itself to dictate your level of exposure at any point of time. Specifically, the various futures exchanges determine the margin requirements to trade markets. Typically, as trading activity becomes volatile, the margin requirements increase. At that time, you should reduce your exposure because you would have specifically allocated only a 1 percent commitment to that market for this particular market timing method. Conversely, when price activity becomes inactive and less volatile, you would increase your investment exposure, hopefully, awaiting a breakout and increased volatility. Consequently, margin requirements serve as a barometer for fund allocation. To clarify this process, the market itself is the best source for dictating market exposure. This measure can easily be determined through simple calculations. The various futures exchanges evaluate the volatility and volume of markets continuously. If for any reason, they believe that the potential exists for wide daily swings in the market and, concurrently, the risk of erosion of a trader's margin, then, typically, they will be inclined to raise margin requirements. Therefore, whenever margin requirements are raised, market exposure as measured by the number of contracts traded should be adjusted accordingly. In other words, say you assume a portfolio size of \$1 million, the use of three trading systems, and the limitation of trading only 10 markets in each. The maximum exposure can be no greater than \$300,000 dollars, since that amount accounts for 30 percent of \$1 million, the maximum account size defined above. It is unrealistic to assume that positions will exist in each and every market at any one period of time, however. In any case, this

allocates \$100,000 to each of three markets. In turn, this would imply that for each method, each market would represent \$10,000 dollars. Now suppose the margin requirement in one market is \$ 1,000. Then 10 contracts could be traded at any one time. If volatility increases, the exchange may decide to raise margin requirements by an additional \$1,000 to \$2,000, thereby forcing you to reduce your position size to five contracts ($5 \times 2,000 = \$10,000$ and $10 \times \$1,000 = \$10,000$). What has effectively occurred is a portfolio contract-size adjustment of 50 percent due to a 100 percent increase in margin requirements. If the volatility has increased sufficiently that the exchange is compelled to raise margin requirements, and you are still positioned in the market and have not been stopped out of the trade, then it is likely that the market has moved in your favor. In that case, the money management discipline and methodology described here requires closing out profitable positions, and prudent trading would also dictate profit taking. The initial exposure was a function of margin requirements, and the change was made as a result of market volatility and potential risk as defined by the increase in margin requirements.

Once in a trade, stop losses must be introduced. Generally, you should apply a standard stop loss and not risk any more than 1 percent of your portfolio on any one trade. Should you desire to increase this stop loss, you should reduce accordingly the size of the position or exposure you have in that market and at that method at that particular time.

For example, you should always maintain a 1 percent risk level, but if you wanted to increase the dollar stop loss to double that amount, you should reduce your market exposure by 50 percent. All other increases in stops would be adjusted accordingly as well.

As the portfolio size in one method and in one market increases, you should adjust your stop loss and profit-taking levels and make certain that your exposure does not constitute an undue weighting in the portfolio. In fact, as the profit in a position increases, you should reduce the position size to maintain a maximum portfolio exposure and, ideally, in effect you will be investing only the profits generated in the trade.

The approach described here is simplistic but effective. High-tech mathematical modeling and sophisticated statistical techniques can be introduced, but experience indicates that minimal improvements will be produced.

Although this approach to money management is devoted to high-margin futures, a similar approach can be easily applied to

stock portfolios.

In conclusion, it is critical that a trader design and implement a methodology that is capable of being measured for performance statistics historically. Once confident of the results and comfortable with the implementation, a trader should paper-trade the method and then apply it real time to the markets with funds in small lots or shares. As you gain experience and confidence with the method, the position size can increase. Discipline is a prerequisite. If you conform to the general money management guidelines discussed in this chapter and then add improvements to the schedule to fill in any blanks in procedure, a difficult and critical component of trading success will have been addressed and satisfied.

The Kelly formula

A simple case of the Kelly formula is where you either double your wager (i.e. you get back your bet plus an equal amount) with probability p or else lose it all with probability $q = 1-p$. The Kelly system says that in this case the optimum fraction of your capital to risk is $f = p-q$.

For example, if you have a system in which you double your money with a 60% probability and lose it all with a 40% probability then your optimal fraction to bet is $f = p - q = 60\% - 40\% = 20\%$.

The mathematical reason that its true is actually quite simple. In the double or nothing case above, the log of your return per bet after W wins and L losses using this system is:

$(W/N) \log(1+f) + (L/N) \log(1-f)$ where $N = W + L$.

If N is large then $W/N = p$ and $L/N = q$. Maximizing this expression in f using calculus gives $f = p-q$, as expected.

Thus, if the assumptions are satisfied, your portfolio will grow at the highest rate if you invest the optimal f each time. One problem with the Kelly criterion is that it implies a larger maximum drawdown than most people would be comfortable with. Most people would likely want to choose a fraction to bet which is less than the Kelly fraction even at the expense of optimality. Another problem is that you often don't know what p is.

For purposes of illustration, I have used the same simple double or nothing setup that Kelly uses in his original article but the entire idea generalizes substantially beyond this.

Since you probably don't know what p and q are you could just pick an $X\%$ and $Y\%$ that are sufficiently small. For example, you

could choose X% as 3% or 5%, say. A number of practically oriented books and articles recommend that sort of approach. William Gallacher's book, Winner Take All, is another source which mentions and critiques Optimal f in the context of futures trading.

Louis Kates

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Tips & Hints:

Should you desire to increase this stop loss (1% of cap.), you should reduce accordingly the size of the position or exposure you have in that market and at that method at that particular time. ð adjust stop loss and profit-taking levels As the profit in a position increases, you should reduce the position size to maintain a maximum portfolio exposure and, ideally, in effect you will be investing only the profits generated in the trade (!).

Random Entry Strategy:

The initial strategy demands that with any trade on, right or wrong, the stop and exit system would either leave you in the good trades or get you out of the bad trades at a small loss and under certain circumstances get you on the other side. The random initial entry perspective forces you to develop a very disciplined trading strategy and trading rules to go along with it. More importantly, it gets you away from looking for all the answers in the various entry systems which were being promoted. The stop and exit rules for the system were developed with an extreme perversion to optimized values and being very careful to watch the degree of freedom which I allowed the system to have. Once you have a set of profitable stop and exit rules, you can concentrate on developing an entry system that was more intuitive than the random 'flip of the coin' method. This step in the development of a system, by definition, became much less important.

The importance of discipline in your trading regime can not be overstated, especially on exits. This discipline was a welcomed (and badly needed) side effect of developing a trading system with this methodology.

Trailing or multiple contracts:

Enter all contracts on the entry and exit half (or a portion) at the

primary exit signal, stop is moved to breakeven on the remainder and we trail the remainder until the secondary target or we get stopped out. Each trade has an associated stop plus a primary and secondary exit δ at the time of entry, all possible exits signals are known and quantified

I use threshold levels to increase my trading size. My formula is: $2 \times \text{max historical drawdown} + \text{margin} = \text{equity needed to trade 1 S\&P contract}$. So a 50% drawdown to me means a real 25% drop in equity.

By drawdown I'm talking about my total net running drawdown. I always use stops on my individual trades which keeps my max. daily net loss around 3% to 5% depending how many systems trade that day (I use 3 systems). The recent volatility in the S&P's has forced me to almost double my stops over the last 6 months which has made the drawdowns deeper.

Turtle System trading signal:

1. Enter a long/short when a tradable (!) exceeds its 20 day highest/lowest close.
2. Exit a long/short when a tradable (!) reverses to inside its 10 day highest/lowest close. (wenn letzter "theoretischer Trade" ein Verlust war, nur eine Position eingehen [theoretischer Trade: wenn weitere Kriterien' nicht erfüllt?])

The second part on money management describes when to increase or decrease the number of contracts traded.

The hint I can give is "volatility". Focus on the volatility of each individual market. Then think of in terms of "units". Derive your starting capital into measureable "units" based on volatility.

The Turtles managed the absolute risk this way:

1. Take the average of the True Range over 10 days
2. If this is rising, trade with FEWER contracts. This allows the stop (=risk) to be wider and so you risk a constant amount of money but with fewer contracts
3. If average TR is lower, then start trading more contracts

Trailing Stop:

Let's say you buy an S&P at 900 and it rises to 902. If the S&P stays above 902 for a week and then falls below 900, say to 898.40 then you get stopped out at that point, 898.40, assuming no slippage. A Trailing \$400.00 trailing stop would get you out at 900.40 assuming that the S&P did not get any higher than 902.

Risk-Reward-Ratio:

10% risk per trade: you may think, that if you have 100000 you could risk/invest no more than 10000 in one stock (e.g. 50 stocks á 200). But consider buying a stock priced at 200 with a 2\$ stop loss: risking 10% means, one could buy 5000 stocks ! So risk must be thought of as the percent of equity you are willing to lose on a trade if you are wrong. Risking more than 3% is extremely risky, especially if you have 10-15 positions on at one time.

Limit Orders:

A big advantage to limit orders is maintaining a predetermined Risk-Reward-Ratio for a specific trade. In other words, if you enter a trade with a stop-loss and a target price and you like to maintain a certain ratio, say 3 to 1, then you must pass if you can't enter the trade within the Risk-Reward parameters. For this reason, I like to use stop with limit orders.

Adaptive Moving Average & "Efficiency Ratio":

An exponential moving average in which the smoothing factor varies with the "Efficiency Ratio". Efficiency ratio is the ratio of total price excursion divided by the sum of all individual excursions of each bar. It equals 1 if all moves are in one direction over the lookback period.

Buy & Hold:

Take your system and gauge it against a Jan through Dec against simply buying and holding. This will let you know how much was really your system and how much was just the market.

100000 Account + Stop-Loss: \$1500 13 Markets

a) simultaneously active in all markets and stopped out in all markets:

19500 Loss ð 19,5% Drawdown

b) 13 consecutive losses:

19500 Loss ð 19,5% Drawdown

c) simultaneously active in all markets and stopped out in all markets + 5 consecutive losses:

97500 Loss ð 97,5% Drawdown (!!!)

d) 5 consecutive losses in all 13 markets (65 consecutive losses):

97500 Loss ð 97,5% Drawdown (!!!)

ð check 50% Drawdown (shutdown point) !!!

5 Systems: sum all positions up to arrive at the final trade: get a

net position of 3 contracts long (5 long - 2 short)

Bring the two files into Excel, and add the NetProfit columns together to get the combined equity curve.

weight the equities: for example, if I have equities for BP, DM, JY and SF I may create an equity curve of $2*BP + 1*DM + 1*JY + 1*SF$ where the coefficients 2,1,1,1 are inputs

15% in margin: 2-5% DM, 2-4% DAX, 2-4% Gold, 1-2% Euro-\$
so increase number of contracts within these limits accept a 50% reduction in Return if it comes together with a 30% reduction in Drawdown

Portfolio-Stop: -7-8% monthly: Stop !

Return p.a.: = 3 * Drawdown

Drawdown + Regression-Analysis:

45° + deleverage at a parallel line ABOVE the 45° line (to let room for further losses)

Drawdown 40%

Recovery 100%

Net Return 20,0% = $(1-40%)*(1+100%)-1$

when using a proportional Trading System, the ratio of recovery should be a constant:

X 2,50

$(1-\text{Drawdown})*(1+2X)-1 = 0$

$D = (X-1) / (2*X)$

30,0% optimal Drawdown ð trade 1/4 less (from 40% to 30%)

22,5% new Net Return

Third Of A Series On The Successful Use of Money Management To Improve Your Trading Results - Tom D'Angelo

<http://www.commoditytraders.com/issue/tom.html>

This is the third in a series of articles which describe how to construct a professional and disciplined money management plan, designed to allow the trader to manage his trading in the same manner as a successful business. Refer back to my previous articles in Vol 4-1 and Vol 3 8 for a detailed discussion of the Profit Center methodology and calculation of the required money management statistics.

In this article I will discuss the Performance Report. The Performance report is a summary of all the significant money management statistics for each individual Profit Center. Each

Profit Center is a business and the Performance Report is a management report which reveals your success or failure in managing that business.

The Trading Plan is the trader's strategy for the next trade based on the information provided by the Performance Report. The Trade Journal is an "after the fact" critique of the Trading Plan after the trade is closed out with a profit or loss. I will discuss the Trading Plan and Trade Journal in my next article.

There appears to be lots of interest in the Real Success trading methodology. I have not purchased this course but I will try to describe a sample Performance Report for Real Success methodology traders.

First, if I was trading the Real Success method, I would set up the following Profit Centers:

RS(M)- All trades taken from the Real Success Methodology

RSDAY - All Real Success day trades. Overnight Real Success trades can be entered into a Center named RSONITE

RSSP500 - Real Success trades segregated by the future traded (RSSWISS, RSBEANS etc)

RS3MIN - All Real Success trades taken off of 3-minute bars

RS5MIN - All Real Success trades taken off of 5-minute bars

RS3MINSP500 - All SP500 trades taken off of 3-minute bars (RS3MINSWISS for all Real Success trades taken off of 3-minute bars for Swiss Franc, etc)

Substitute 5MIN for 3MIN to segregate trades taken off of 5-minute bars. Example, RS5MINSP500 for all SP500 trades taken off of 5-minute bars.

Helpful hint - If you are planning to paper trade the Real Success methodology first, simply add a P to the end of all the Profit Center names. The P signifies a paper simply add a P to the end of all the Profit Center names. The P signifies a paper minute SP500 bars, you would enter the trades into a Center named RS5MINSP500P. After you have about 20 paper trades in each Center, calculate the statistics I described in Vol 4-1 of CTCN and you will have excellent information as to your performance paper trading the Real Success methodology for each Profit Center.

Results of the paper trades can then be compared with real time results by using the Performance Report.

When you begin real-time trading, create The Profit Centers I have described above (without the P at the end of the name) and enter the real-time trades into those Centers.

After 20 real-time trades have been entered into a Profit Center, you will have a good data base of trading information and can complete your first Performance Report.

The following is a brief description of the items contained in the Performance Report.

Profit Center Name - Name of Profit Center analyzed.

Example, RS5MINSP500 for all trades taken from Real Success methodology trading 5 minute SP500 bars.

Profit Center Type and Goals - Description of the Profit Center and the financial goals the trader is attempting to achieve. For Example, Profit Center RS5MINSP500 will contain only SP500 trades taken from the Real Success methodology based on 5-minute bar charts.

After 100 paper trades, the trader has achieved 60 profitable trades (60%) and 40 unprofitable trades (40%). Average Profitable trade was \$600, average unprofitable trade was \$400 for a ratio of 1.50. The Profit Factor was calculated to be 1.23. Net profits after 100 hypothetical paper trades are \$2000.

Worst drawdown was \$1800. Best series of winners was 6 with \$1600 in profits. Worst series of losers was 4 with \$1550 in losses. The trader will try not to lose more than 3% of capital on any one trade. These statistics of hypothetical paper trades can then be used as goals to be achieved with real-time trades.

The remainder of the Performance Report lists statistics from real-time trading.

Initial Capital - \$30,000. This serves as the funding requirement for the business to cover margin requirements and trading losses.

Drawdown - Current drawdown in progress = \$1050. Largest actual real-time drawdown = \$2300

Series - Worst series of consecutive losers = 4 with a loss of \$1300 in the series of 4 trades. Best series of winners = 6 with a profit of \$1700 in the series of 6 trades. Current series in effect - 2 consecutive profitable trades with a profit of \$600 in the series of 2 trades.

Largest profitable trade - \$ 950 on 3/11/96

Largest unprofitable trade - \$1020 on 2/ 5/96

Optimum number of contracts to trade = 3, based on Ralph Vince's formula.

Trading efficiency - 57% winners and 43% losers.

Average profitable trade = \$500. Average unprofitable trade = \$300. Ratio of profitable to unprofitable = 1.67.

Range of losing trade as % of capital = 2.1% to 4.3%

Profitability - Profit Factor = 1.14. Profit Center is profitable with profitability trending upwards. I use graphs to determine the trend of profitability with the ProGraphics module of my MANAGER money management software. I will describe in my next article how I use the trend of profitability to determine how many contracts to trade.

Current net profit after 60 real-time trades \$1100. Current Capital = \$31,100 which equals \$30,000 Initial Capital plus \$1100 net profit.

Thus, the trader has established a business named RS5MINSP500 which is producing revenues (profitable trades) and expenses (losing trades + commissions). The Performance Report informs him of his trading performance in the RS5MINSP500 business as well as enabling him to compare actual real-time results with goals derived from hypothetical paper trades.

The Performance Report takes the trader out of the dark and into the light. He knows exactly his trading performance for each of his businesses and can instantly explain to anyone his profitability and efficiency as a speculator.

Most traders experience psychological problems due to the fact that they attempt to manage a business (i.e. trade) without any type of organizational structure which can provide them with the information necessary to execute disciplined, informed and educated trading decisions.

Nearly all traders manage their trading using monthly broker's statements which provide a "macro" view of their trading. These statements only inform you as to your overall profit or loss for all your trading. This type of data is totally inadequate for the professional trader who requires more detailed information such as provided by the Profit Center methodology.

Hopefully, the reader has begun to see why many aspiring

traders experience the same psychological problems....fear, greed, anxiety, inability to "pull the trigger" etc. The average trader operates in a fog. He has no money management methodology to provide the structure for successfully managing his trading business. Since he operates in the dark, he inevitably becomes uncertain and anxious. Continually floundering around in the dark makes the situation worse and worse, like a snowball rolling downhill.

You cannot successfully manage any type of business without first organizing your trading performance into a meaningful structure which reveals trading strengths which can be exploited and weak areas which must be eliminated or reduced.

The Performance Report provides the basis for formulating the Trading Plan. The Trading Plan is the strategy for the next trade based on the trader's trading performance as revealed by the Performance Report. I will also explain how the Performance Report is used to formulate the Trading Plan as regards to how many contracts to trade.

After the Trading Plan has been executed and the trade closed out with a profit or loss, the trader completes the Trade Journal. The Trade Journal is the "after the fact" critique of the Trading Plan. These three reports are specifically designed to eliminate the psychological problems which plague most traders and create an environment conducive to executing rapid, informed and educated trading decisions.

The Trading Plan and Trade Journal will be described in my next article as well as how this type of methodology promotes psychological stability and significantly reduces stress.

I will also describe how to file all the reports so that the trader will now be operating in a professional, disciplined and informed trading environment . . . similar to a successful business and structured to engender confident trading decisions. This type of environment is specifically designed to advance the trader up the learning curves of the three disciplines necessary to achieve successful long-term successful speculation: Trading methodology; psychological discipline and; money management.

For a free booklet describing the reports I use and information on a newly completed book I wrote on money management, feel free to contact me at 800-MONEY30.

System Testing Observation Adam White

Here is an interesting observation I made while system testing.

Say you run a system test over 10,000 bars of data, then print out a chart of the system's equity line. Then repeat the test, but start 100 bars later. Let's say two trades were included in those 100 bars, so they've been dropped. Now print the second equity line and compare it to the first. You'd get exactly the same equity line, but 100 bars shorter. Right?

- Wrong!

When I do this I get a radically different equity line on the second test, i.e., they are not near mirror images of each other. My hunch is that a form of the chaotician's "butterfly-effect" has arisen: changing any given trade's market position (long, short, flat) will effect in a chain reaction all the subsequent trades in complex and unexpected ways. Here dropping the first two trades could very well change the system's market position when the third trade is calculated, and so on.

I believe this observation has profound and unfortunate implications for the robustness of system testing. It's a second and more subtle problem that lies behind the mere curve fitting/optimization problem.

If dropping a couple of early trades will always effect later trades, then there's no truly "neutral" starting point with any test data. Where your test data starts determines the final test results just as much as your system does.

Editor's Note: Not too many CTCN members are aware of this but I have known about this for some time. The success or failure of many different mechanical systems is predicated to a surprising and varying degree on the sequence of events just prior to the first actual trade generated by the system.

The trade setup and timing of the first trade can have a profound effect on the subsequent trading results. The circumstances and timing of entry into the first trade can sometimes make a huge difference in the overall trading performance.

Max Robinson Has A Unique Way To Use Closing Price To Mimic A Moving Average

Keep up the good work. Anyone that is trying to do something good will be criticized or disliked by someone. But remember,

you are helping many, while only a few are unhappy.

I have the System 2000. It does help identify turning points and congestion areas in the market. But then one needs an entry method.

The secret of all financial success is money management. How much can you risk on this trade, and still be financially able to take some losses and still be able to trade when the profitable trade finally comes by. Study Vol 4-1 of CTCN, articles are really enlightening (D'Angelo & ??). Can't read name?

I have two Ken Roberts courses. They have some good ideas in them and one of them convinced me to let go of some old anger.

Every one needs to understand that the constitution may guarantee equality under the law, but we are not born with the same abilities. Some of us just will never become a winning trader, but we might become a successful painter.

Larry Williams latest video had lots of information in it. I have a mathematical way of using the close of today's market to compute an average that is similar to the 9-day and 40-day average.

My method is much easier and quicker to compute than most averages, since you only deal with today's close. This method picks turning points and acceleration points like any system that I have seen. But like all of the other systems, one has to apply his own entry and money management plan to it.

The big problem I believe we all have is fear and greed. Most of us are so greedy that we can't stand to be wrong 5 or 6 times out of every 10 trades. So we keep searching for the Holy Grail. In order to get over the fear of losing, one has to find a system and run it on old data until you realize that it may work okay! Call anytime 308-775-3140.

**All about Stops
Donald Turnbull**

Here are some thoughts that might prove useful to neophyte traders like me. They may duplicate many that you have already published, but I have not had the pleasure of reading.

I do not trade the S&P index because the margin requirements

are so high it would take too big a proportion of my account to cover them. I would then have one position with, perhaps a 50% chance of success (and a 50% chance of failure).

Editor's Note: The S&P 500 margin is indeed very high for overnight position trades. The last time I checked it was \$12,500 at my brokerage firm. This is one of the main reasons the S&P is not recommended for overnight trades.

However, like most brokers, my broker reduces the margin sharply for daytraders, where it's only \$3,500.

In fact, I have heard it said by some of our members that certain brokers do not require any margin providing no trades are carried overnight. I am not sure if that's correct information and have not verified it to be correct, but have heard it said many times.

For similar reasons, I do not trade Japanese Yen, where one full point is worth \$1,250. The difference between the high and low in one day can be \$6,000. This is too rich for my trading style. Instead I trade low margin trades like pork bellies, live meats and beans, and have a number of trades going at one time.

Just suppose I have 5 trades going, each with a 50% chance of success (and a 50% chance of failure). The statistical probability of all five failing is $.5 \times .5 \times .5 \times .5 \times .5$ which is .03125 or only 3%.

Editor's Note: Are Don's figures correct? Is it true that five trades involving 50% odds results in only a 3% chance of having five straight losers? If so, why does your editor frequently hear about certain systems or trading advisors having far more than five consecutive losers. Many of those systems are in fact ranked much better than a 50% success ratio by either the developer or Futures Truth Ltd.

In fact, I have heard of some systems or trading advisors that claim perhaps a 60 or 70% (or even better) success rate yet sometimes will have say ten, or even 20 (or more) straight losing trades. How is this possible, if Don's failure possibility is only 3%, or even less than 3% based on profitable trade percentages considerably higher than 50%?

I recall some years ago I read in one of the major trading publications(I believe it was Barrons Newspaper) that Jake Bernstein had (if I remember correctly), 23 straight losing trades.

I know Jake and he is perhaps the most respected and most knowledgeable commodity expert there is. Jake has also written 23 books on trading commodities and is incredibly knowledgeable on trading. Jake is also a psychiatrist (or a psychologist . . . I always get the two confused) and no doubt has great discipline and trading skill. I am sure Jake will normally have at least 50% winning trades. So how is it possible someone like Jake could have over 20 consecutive losers? I am not picking on Jake as many other famous traders and experts have also had 20 or more straight losing trades over the years.

What is the chance of this happening, if in fact the profitable trade percentage is 50%, or even higher? If the chance is extremely small, why has your editor heard about this happening numerous times over the years, involving a vast number of popular systems, methods, and well known trading advisors or respected advisory services?

The probability of at least one or more successes is $1 - (.5 \times .5 \times .5 \times .5)$ which is 93.755% . That's a lot better than the 50% mentioned above.

With tight stops, the losses are limited to an average of \$300. With 4 losses, this amounts to \$1,200. Profits are allowed to run and usually average \$2,000. This results in small but virtually certain profits.

In actual practice, by limiting my trades to the recommendations of an advisory service, like Steve Myers on Futures (Summerfield, FL, 1 800-835-0096), probability of success is much higher.

I have heard it is bad practice to order a position "at the market." Before placing an order, I phone my broker's quoteline and get the high, low and last figures. Then I place a limit order at the "last" figure. Is there a better way of doing it? Editor's Note: I do not necessarily agree it's a "bad practice" to trade with market orders. In fact, our Real Success Methodology uses market orders more frequently than limit orders, especially when entering into a new position. We also use market orders extensively on exits involving targets and stops.

Market orders have several major advantages over limit orders. One major advantage is you occasionally have difficulty verifying you are actually in a trade or out of a trade due to uncertainty involving a limit order being filled. On the contrary, with a

market order you always know you are filled and in the trade or out of the trade. Another advantage is a market order will normally have less slippage than a limit order. In fact, as witnessed in CTC's Real Success Videos, sometimes we actually have positive slippage with market orders, rather than the usual negative slippage involving limit orders.

When profits accumulate and my account grows above my target figure, I have my broker send me a check for the difference. That way, I am not tempted to get into larger and larger trades. This may not be the way to become a millionaire, but it suits my risk tolerance level.

Moore Research Center publishes a list of "optimum" stop values, beyond which a commodity rarely recovers, and within which it often recovers. Their "optimum" stops seem to me to be too high. They are all in the range of \$1,200 to \$1,500. To go along with my philosophy of having a number of trades going at a time, I think that tight stops are appropriate. This may stop you out of some trades that eventually recover and make a huge profit. But even in these cases, if you have confidence that the market will eventually rise, and you watch the market closely, you can get back in again and lose only one round-turn commission. However, if the commodity doesn't recover, you've saved yourself a lot of money.

Money Management, Optimal f

BALANCING ACT By Mike DeAmicis-Roberts

Comparing optimal f and probability of ruin can give you better insight into the riskreward parameters of your trading.

As many traders know, success depends as much on money management strategy as it does on a particular trading system. Optimal f and probability of ruin (POR) are two key money management concepts that help you determine how to best allocate capital for maximum growth and minimal risk to your account.

In some cases, however, these formulas conflict. We will overview the meaning and application of optimal f and POR and discuss a method (and offer some free Windows software) for evaluating systems by comparing these two formulas.

See Futures' downloads page for a copy of this software and "Profiling Optimal f And POR" for directions on using it.

Optimal growth Optimal f , popularized by Ralph Vince in his book *Portfolio Management Formulas* (Wiley 1989), is the ideal percentage of capital to allocate for any particular trade - the amount of equity that will result in the greatest gain to the account (see "Without money management, you don't have a system," *Futures, Building a Trading System* special issue, October 1994). This amount, which determines how many contracts you can trade, is based on the profit and loss profile of a trading system, rather than a percent of account equity.

Optimal f allows the trader to maximize the profitability of a system. If you trade with a higher or lower percentage of equity, you run the risk of not capitalizing enough on your winning trades or getting hit too hard on your losing trades.

The POR is the likelihood your system will reach a point of success or failure, that is, the chance that you will blow out your account before hitting your financial goal. Ruin is defined as the account level at which a trader stops trading. The POR is calculated using the percentage win, the average win, the average loss, the account size, the account size at ruin and the account size at success.

Because the probability of ruin increases with the amount risked, it's important to limit the amount of capital you commit to each trade. By trading smaller portions of the account equity, there is a greater chance a well-tested system will perform closer to its historical results. Traders who risk a larger percentage of account equity are more susceptible to variation from the expected results because of the small trade sample size.

Unfortunately, finding the optimal f and POR for a system is a computationally intensive process, (although the math involved is not difficult). As a result, few traders know the optimal f or POR for their systems. In most cases, this leads to diminished returns and increased risk.

Optimal f and POR calculations do not always suggest the same risk parameters. By comparing optimal f and POR, you can determine if the amount of capital risked at the optimal f value results in an unacceptably high POR. On the other hand, a trader may wish to increase the POR for the chance of exponentially higher returns. Ultimately this is a decision every trader must make. The optimal f amount suggests how much to risk; the POR value gives you an idea of the relative risk associated with

trading this amount.

Application When evaluating a system for the optimal f , you find that the total returns lie on a curve, with the optimal f value at the apex. Moving the same amount to the left or right of the apex curbs the potential returns of a system by approximately the same amount. For example, if the optimal f for a system is 25%, then a trader can expect about the same amount of returns while trading at either 20% or 30% of the account.

The same cannot be said about the POR. In short, the more a trader risks, the greater the POR: It always will be higher when trading more than the optimal f and lower when trading less. Generally, if you don't want to trade at the optimal f value, it's wise to trade at a lower value to decrease your risk of ruin.

In some instances, it might not even be possible to trade a system at optimal f . For example, a trader with a \$15,000 account and an optimal f of 5% can only risk \$750 on any trade. This may not be an adequate amount in markets like the bonds and S&Ps.

Another problem is when the optimal f amount does not translate evenly into whole contracts. Using the example above, the trader should risk only \$750 on each signal. If a single contract position implies a \$500 risk to the account, the trader must decide if it is better to trade one or two contracts, which in turn influences the POR for the account.

There are no strict rules - "you should always trade y percent of optimal f " or " x is an acceptable POR." Optimal f and POR analysis does not give a trader any specific guidelines on how to trade. Rather, it shows the risk and reward associated with using a certain money management strategy for a trading system. You can then use this information to better evaluate the prudence of your trading approach.

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MONEY MANAGEMENT INTRODUCTION <http://www.bhld.com/brochure/money.html>

Money management is a part of an over-all investment system. Most people never have a formal money management strategy,

yet every investment must address the two basic money management questions "What should I invest in?" and "How much should I invest?"

Your over-all investment system includes your money management strategy and several trading and investment models. You may have a number of investment models which you have never formalized, such as accumulation of savings, purchase of long term bonds and so forth.

The money management information you develop with Behold! cannot utilize information about those parts of your investment system which are not formalized within Behold! yet those other parts will affect the degree of risk which you are willing to accept for the trading and investment models you develop with Behold!

The money management features in Behold! address two main questions:

(A) What is the best way to allocate my money among my formalized trading models and potential markets?

(B) With the capital on hand how many contracts (shares) should I buy?

This second question is particularly important to commodity traders as the leverage available to them allows carrying more contracts than is wise.

The question concerning capital allocation is vital to any trader who has sufficient capital to allow trading more than one stock or commodity.

Definition of Terms:

The Performance Summary for a single file or for a set of files for a single commodity (a roll-over report) shows two pieces of information at the bottom of the "All Trades" section, Optimal Capital and TWR.

Optimal Capital can be defined as: The amount of capital which you "should" have used to back up each commodity position, in order to achieve the highest rate of gain.

TWR is an acronym for terminal wealth relative. It is the ratio of final capital to initial capital which you would have achieved had you backed each position with the optimal capital.

Both of the above definitions assume that all profits/losses are to

be plowed back into trading, and that you have the ability to carry fractional positions. Note that TWR in Behold! is an annualized number to allow comparisons between tests of different lengths.

"q" If you test a portfolio (with more than one stock or commodity) and check the box Calc Optimum Allocation then you will get two other types of data. One is simply labeled as "q" and the other is a list of numbers showing the optimal fraction of capital which should have been allocated to each security. Use of the capital allocation numbers and "q" will allow a commodity trader to obtain a Geometric Optimal Portfolio: that portfolio of the commodities tested which will give the highest growth rate.

For a better description of the terms and an in depth understanding of their derivation you should read the book Portfolio Management Formulas by Ralph Vince. For those with a mathematical bent it would be good to read his second book The Mathematics of Money Management.

Optimal Capital, TWR, the optimal capital allocation in a portfolio and the "q" value are all computed using data taken for trading with a fixed number of positions. They are not effected by the manner in which you vary the number of positions you are trading.

Trade Testing Options in Behold!

There are many ways to do portfolio performance testing, and in order to allow you to get what you want (which is not necessarily what we expect) the money management features in Behold! have been placed under your direct command. Thus we do not determine exactly what is "optimum" and then force you to live with it.

The Test Options dialog is use to set many testing options, of which the following are of interest now.

#Positions:

Single. This selection will require Behold! to always open a single position. This is the way that you should do your initial system development.

by Rules This selection allows you to write rules which control the number of positions opened. Your rules can access trade information such as the amount won or lost on the previous

trade, current working capital and Worksheet data such as RSI, ADX and so forth.

Auto Behold! will calculate the number of positions to open as current working capital divided by the capital per position (\$Posn) which is set in the same dialog. The initial working capital is set in this dialog in the Capital, Single file test item.

The next items determine how your working capital is changed by your trading results.

None Means no reallocation. All of your wins accrue to your working capital, and all losses are subtracted from working capital.

Percentage A certain percentage of each win will be taken away, to simulate recapitalizing losses in other markets. A certain percentage of each loss will be replaced, to simulate recapitalization using profits from other markets.

Dynamic This choice is only applicable to tests on portfolios.

The last item of interest is **Monthly Withdrawal**. This item allows you to determine how withdrawing a portion of your working capital, to cover expenses and so forth, will effect trading results.

Optimal Capital

The information in this section is mainly of interest to commodity traders, however stock traders should always assure themselves that the Optimal Capital value shown in the main Trade Test report is well above the cost of the stocks they are trading.

Portfolio Capital Allocation Proper diversification of your investment capital would recognize all of your investments and allocate capital among them in order to obtain the maximum rate of return with the minimum relative risk. Capital Allocation in Behold! can only determine the best way to allocate your capital among the trading models and securities which you have formalized with Behold!

IF you run a Portfolio trade test and check the Calc Optimum Allocation box you will get three new items at the top of the full portfolio report. These are "Q" and the optimal % Capital allocation as determined for the securities tested in your portfolio. See Vince's book for a discussion of "Q."

As an example of the allocation information, see the example below.

Financial.PTF Initial Capital = 100000 "Q"(E/V) = 2.29 IMMEUD
Actual %Capital = 100.00 Optimal % 62.55 TBOND Actual
%Capital = 100.00 Optimal % 37.45

Money Management 9

A small Quizlet: (T: Theory, Q: Question, A: Answer, E: Explanation)

T: It is better to trade 2 different assets at the time than to trade 2 different trading systems simultaneously.

Q: True or False?

[Click here to see the answer \(after thinking, not guessing...\)](#)

Money Management

Dr. Van K. Tharp on Money Management & Position Sizing

Drawdowns

Manage Other's Money Definition

Models

An Excerpt from Dr. Tharp's Report on Money Management.

John was a little shell-shocked over what had happened in the market over the last three days. He'd lost 70% of his account value. He was shaken, but still convinced that he could make the money back! After all, he had been up almost 200% before the market withered him down. He still had \$4,500 left in his account. What advice would you give John?

Perhaps your answer is, "I don't know. I don't have enough information to know what John is doing." But you do have enough information. You know he only has \$4,500 in his account and you know the kind of fluctuations his account has been going through. As a result, you have enough information to understand his money management -- the most important part of his trading. And your advice should be, "Get out of the market immediately. You don't have enough money to trade." However, the average person is usually trying to make a big killing in the market, thinking that he or she can turn a \$5,000 to \$10,000 account into a million dollars in less than a year. While this sort of feat is possible, the chances of ruin for anyone who attempts it

is almost 100%.

Ralph Vince did an experiment with forty Ph.D.s. He ruled out doctorates with a background in statistics or trading. All others were qualified. The forty doctorates were given a computer game to trade. They started with \$1,000 and were given 100 trials in a game in which they would win 60% of the time. When they won, they won the amount of money they risked in that trial. When they lost, they lost the amount of money they risked for that trial.

Guess how many of the Ph.Ds had made money at the end of 100 trials? When the results were tabulated, only two of them made money. The other 38 lost money. Imagine that! 95% of them lost money playing a game in which the odds of winning were better than any game in Las Vegas. Why? The reason they lost was their adoption of the gambler's fallacy and the resulting poor money management.

Let's say you started the game risking \$1000. In fact, you do that three times in a row and you lose all three times -- a distinct possibility in this game. Now you are down to \$7,000 and you think, "I've had three losses in a row, so I'm really due to win now." That's the gambler's fallacy because your chances of winning are still just 60%. Anyway, you decide to bet \$3,000 because you are so sure you will win. However, you again lose and now you only have \$4,000. Your chances of making money in the game are slim now, because you must make 150% just to break even. Although the chances of four consecutive losses are slim -- .0256 -- it still is quite likely to occur in a 100 trial game.

Here's another way they could have gone broke. Let's say they started out betting \$2,500. They have three losses in a row and are now down to \$2,500. They now must make 300% just to get back to even and they probably won't do that before they go broke.

In either case, the failure to profit in this easy game occurred because the person risked too much money. The excessive risk occurred for psychological reasons -greed, the judgmental heuristic of not understanding the odds, or in some cases, the desire to fail. However, mathematically their losses occurred because they were risking too much money.

What typically happens is that the average person comes into

most speculative markets with too little money. An account under \$50,000 is small, but the average account is only \$5,000 to \$10,000. As a result, these people are practicing poor money management just because their account is too small. Their mathematical odds of failure are very high just because they open an account that is too small.

Hundreds of thousands of hopefuls open up their speculative accounts yearly, only to be lead to the slaughter by others who are happy to take their money. Many brokers know these people don't have a chance, but they are happy to take their money in the form of fees and commissions. In addition, it takes many \$5,000 accounts to feed a single multi-million dollar account that consistently gets a healthy rate of return.

Look at the table below. Notice how much your account has to recover from various sized drawdowns in order to get back to even. For example, losses as large as 20% don't require that much larger of a corresponding gain to get back to even. But a 40% drawdown requires a 66.7% gain to breakeven

Drawdown Gain to Recover

5 Percent 5.3% Gain

10 Percent 11.1% Gain

15 Percent 17.6% Gain

20 Percent 25% Gain

25 Percent 33% Gain

30 Percent 42.9% Gain

40 Percent 66.7% Gain

50 Percent 100% Gain

60 Percent 150% Gain

75 Percent 300% Gain

90 Percent 900% Gain

and a 50% drawdown requires a 100% gain. Losses beyond 50% require huge, improbable gains in order to get back to even. As a result, when you risk too much and lose, your chances of a full recovery are very slim.

Managing Other People's Money

In the futures industry, when an account goes down in value, it's called a drawdown. Suppose you open an account for \$50,000 on August 15th. For a month and a half, the account goes straight up and on September 30th, it closes at a high of \$80,000 for a gain

of 60%. At this point, you may still be in all of the same trading positions. But as a professional, your account is "marked to the market" at the end of the month and statements go out to your clients indicating what their respective accounts are worth.

Now, let's say that your positions start to go down in value around the 6th of October. Eventually, you close them out around the 14th of October and your account is now worth about \$60,000. And let's say, for the sake of discussion, that your account at the end of October is worth \$60,000. Essentially, you've had a peak-to-trough drawdown (peak = \$80,000, trough = \$60,000) of \$20,000 or 25%. This may have occurred despite the fact that all of your trades were winners. It doesn't really matter as far as clients are concerned. They still believe that you just lost \$20,000 (or 25%) of their money.

Let's say that you now make some losing trades. Winners and losers, in fact, come and go so that by August 30th of the following year, the account is now worth \$52,000. It has never gone above \$80,000, the previous peak, so you now have a peak-to-trough drawdown of \$28,000 -- or 35%. As far as the industry is concerned, you have an annual rate of return of 4% (i.e., the account is only up by \$2,000) and you are now labeled as having 35% peak-to-trough drawdown. And the ironic thing is that most of the drawdown occurred at a time in which you didn't have a losing trade -- you just managed to give back some of your profits. Nevertheless, you are still considered to be a terrible money manager. Money managers typically have to wear the label of the worst peak-to-trough drawdown that they produce for their clients for the rest of their lives.

Think about it from the client's viewpoint. You watched \$28,000 of your money disappear. To you it's a real loss. You could have asked for your money on the first of October and been \$28,000 richer.

Trading performance, as a result, typically is best measured by one's reward-to-risk ratio. The reward is usually the compounded annual rate of return. In our example, it was 4% for the first year. The risk is considered to be the peak-to-trough drawdown which in our example was 35%. Thus, this trader's reward-to-risk ratio was $4/35$ or 0.114 -- a terrible ratio.

Typically, you want to see ratios of 2 better in a money manager. For example, if you had put \$50,000 in the account and watched

it rise to \$58,000 you would have an annual rate of return of 16%. Let's say that when your account has reached \$53,000, it had drawn down to \$52,000 and then gone straight up to \$58,000. That means that your peak to trough drawdown was only 0.0189 (\$1,000 drawdown divided by the peak equity of \$53,000). Thus the reward-to-risk ratio would have been a very respectable 8.5. People would flock to give you money with that kind of ratio.

Let's take another viewpoint and assume that the \$50,000 account is your own. How would you feel about your performance in the two scenarios? In the first scenario you made \$2,000 and gave back \$28,000. In the second scenario, you made \$7,000 and only gave back \$1,000.

Let's say that you are not interested in 16% gains. You want 40-50% gains. In the first, scenario you had a 60% gain in a month and a half. You think you can do that several times at year. And you're willing to take the chance of giving all or most of it back in order to do that. You wouldn't make a very good money manager, but you might be able to grow your own account at the fastest possible rate of return if you could "stomach" the drawdowns.

Both winning scenarios, plus numerous losing scenario, are possible using the same trading system. You could aim for the highest reward to risk ratio. You could aim for the highest return. Or you could be very wild, like the Ph.D.s in the Ralph Vince game and lose much of your money by risking too much on any given trade. Interestingly enough, a research study (Brinson, Singer, and Beebower, 1991) has shown that money management (called asset allocation in this case) explained 91.5% of the returns earned by 82 large pension plans over a ten year period. The study also showed that investment decisions by the plan sponsors pertaining to both the selection of investments and their timing, accounted for less than 10% of the returns. The obvious conclusion is that money management is a critical factor in trading and investment decision making. (Determinants of Portfolio Performance II: An Update, Financial Analysts Journal, 47, May-June, 1991, p 40-49.)

You now understand the importance of money management. Let's now look at various money management models, so that you can see how money management works.

Money Management Defined

Money management is that portion of one's trading system that tells you "how many" or "how much?" How many units of your investment should you put on at a given time? How much risk should you be willing to take? Aside from your personal psychological issues, this is the most critical concept you need to tackle as a trader or investor.

The concept is critical because the question of "how much" determines your risk and your profit potential. In addition, you need to spread your opportunity around into a number of different investments or products. Equalizing your exposure over the various trades or investments in your portfolio gives each one an equal chance of making you money.

I was intrigued when I read Jack Schwager's Market Wizards in which he interviews some of the world's top traders and investors. Practically all of them talked about the importance of money management. Here are a few sample quotes:

"Risk management is the most important thing to be well understood. Undertrade, undertrade, undertrade is my second piece of advice. Whatever you think your position ought to be, cut it at least in half." -- Bruce Kovner

"Never risk more than 1% of your total equity in any one trade. By risking 1%, I am indifferent to any individual trade. Keeping your risk small and constant is absolutely critical." -- Larry Hite

"You have to minimize your losses and try to preserve capital for those very few instances where you can make a lot in a very short period of time. What you can't afford to do is throw away your capital on suboptimal trades." -- Richard Dennis

Professional gamblers play low expectancy or even negative expectancy games. They simply use skill and/or knowledge to get a slight edge. These people understand very clearly that money management is the key to their success. Money management for gamblers tends to fall into two types of systems -- martingale and anti-martingale systems. And investors and traders should know about these models.

Martingale systems increase winnings during a losing streak. For example, suppose you were playing red and black at the roulette wheel. Here you are paid a dollar for every dollar you risk, but your odds of winning are less than 50% on each trial. However,

with the martingale system you think you have a chance of making money through money management. The assumption is that after a string of losses you will eventually win. And the assumption is true -- you will win eventually. Consequently, you start with a bet of one dollar and double the bet after every loss. When the ball falls on the color you bet, you will make a dollar from the entire sequence of wagers. The logic is sound. Eventually, you will win and make a dollar. But two factors work against you when you use a martingale system. First, long losing streaks are possible, especially since the odds are less than 50% in your favor. For example, one is likely to have a streak of 10 losses in a row in a 1,000 trials. In fact, a streak of 15 or 16 losses in a row is quite probable. By the time you reached ten in a row, you would be betting \$2,048 in order to come out a dollar ahead. If you lose on the eleventh throw, you would have lost \$4,095. Your reward-to-risk ratio is now 1 to 4095.

Second, the casinos place betting limits. At a table where the minimum bet was a dollar, they would never allow you to bet much over \$50 or \$100. As a result, martingale betting systems, where you risk more when you lose, just do not work.

Anti-martingale systems, where you increase your risk when you win, do work. And smart gamblers know to increase their bets, within certain limits, when they are winning. And the same is true for trading or investing. Money management systems that work call for you to increase your risk size when you make money. That holds for gambling and for trading and investing.

The purpose of money management is to tell you how many units (shares or contracts) you are going to put on, given the size of your account. For example, a money management decision might be that you don't have enough money to put on any positions because the risk is too big. It allows you to determine your reward and risk characteristics by determining how many units you risk on a given trade and in each trade in a portfolio. It also helps you equalize your trade exposure in a portfolio.

Some people believe that they are "managing their money" by having a "money management stop." Such a stop would be one in which you get out of your position when you lose a predetermined amount of money -- say \$1000. However, this kind of stop does not tell you "how much" or "how many", so it really has nothing to do with money management.

Nevertheless, there are numerous money management strategies that you can use. In the remainder of this report, I'm going to present different money management strategies that work. Some are probably much more suited to your style of trading than others. Some work best with stock accounts, while others are designed for futures account. All of them are Anti-Martingale strategies.

The rest of this article is continued in Dr. Tharp's special report on money management.

A Special Report on Money Management By Van K. Tharp Ph.D.

In this special report, written by Van K. Tharp, Ph.D., you'll learn dozens of different models of money management—one of which could make a big difference for you. The biggest secret that most people neglect in their quest for big profits is proper money management. Research has proven that about 90% of the variance in performance between portfolio managers is due to money management. For the average trader, it makes the difference between losing, and winning big—depending upon your objectives. Probably the most valuable book any trader could own.

What you will learn from this report:

- How to meet your objectives using money management
- The definition of money management
- 27 models of money management with three ways to measure equity
- How to design high reward risk systems for managing money
- Four techniques to produce maximum profits

Dr. Tharp calls this type of money management a "secret" because few people seem to understand it, including many people who've written books on the topic. Some people call it risk control, others call it diversification, and still others call it how to "wisely" invest your money. However, the money management that is the key to top trading and investing simply refers to the algorithm that tells you "how much" with respect to any particular position in the market.

As if the issue of money management weren't confusing enough on its own, there are also many psychological biases that keep people from practicing sound money management. And, there are practical considerations, such as not understanding money management or not having sufficient funds to practice sound money management.

This report is written to give you an overall understanding of the topic and to show you various models of money management. To order this exclusive report call IITM at 800-385-IITM (4486) or at 919-852-3664. The report is \$79.95 plus shipping and handling.

Last revised: July 08, 1999

Five Tips To Give You More Discipline

They Will Help You Earn Bigger, More Consistent Profits (Without the Stress) by Changing Your Thinking -- GUARANTEED!

Responsibility

Mistakes

Mental State Control

Change What You're Doing Scan Your Body

Tip #1: Take Responsibility for Everything That Happens to you. One of the keys to peak performance is to make the assumption that you create everything that happens to you. For example, if you give your money to someone and then run off with it, you must still take responsibility. You made the decision to give that person money. You made a decision about how much information you needed from that person before you gave them money. Thus, even though they committed an illegal act, you are still ultimately responsible.

When this sounds like I'm asking you to feel guilty for your mistakes, the truth is exactly the opposite. What I am asking you to do is set yourself free by taking control over the rest of your life instead of being a victim.

Tip #2: There are only two types of mistakes. You might say that your biggest problem is your spouse. If you believe that, then it is probably true. In addition, you are also doomed to repeat that mistake for the rest of your life. No, I'm not saying that you can't divorce your spouse. You probably can and may do so. But you will probably just find another spouse that will give you the same problems. However, if you look at the problem differently, such as noticing that I get angry when my spouse does X, then you have taken a step toward controlling the problem. The reason is that you have now traced the problem to a mental state that you can elect to own - your anger. You don't have to get angry at your spouse when that person does X. You can elect to have another response. That is the essence of discipline.

Now you can also apply this to the process of trading or

investing. The mistakes you make are in some way related to negative mental states -- whether it's an inability to pull the trigger or compulsiveness, you can trace it to a negative mental state.

Tip #3: Discipline Involves Controlling Your Mental State. My home study course has over 15 ways to control your mental state. This means that you control your life and not your mental state. You don't have to be the victim of fear. Instead, you can just notice "Oh, I'm starting to do that fear thing and I need to take control."

Tip #4: If you don't like the results you are getting, respond differently! How are you producing fear or the mental state you don't want? Notice what you are doing and do something else or do it differently. For example, are you producing fear by something you tell yourself? Then tell yourself something else. Or change the nature of the voice. Try saying the same thing in a voice like Mickey Mouse. If you are producing fear by something you are seeing in your mind, then picture something else. Or you might change the nature of the picture. Make it black and white or move it further away. This amounts to taking charge of the way you run your brain.

Tip #5: Change what you are doing with your body to change the reaction of your mind. When your mental state is inappropriate, then scan your body. Notice what you are doing with your body. If there is tension, relax that area. If your posture is bad, straighten up. Also notice your breathing. Take regular deep breaths and you can literally change your state. As an exercise, try imitating people's walking. Notice what it feels like to walk in another person's shoes. This will convince you how important it is to change what you do with your body to change your mental states.

Next time you are having a problem trading, ask yourself how am I doing this? Change what you are doing with your body, and if you do it right, you should notice a big change in your behavior.

For more information about discipline see Dr. Tharp's Home Study Course or the Peak Performance Trading Seminar.

Last revised: July 08, 1999

BASIC TECHNIQUES

Exploiting Positions With Money Management by Daryl Guppy
Here's a trading technique adding positions to successful trades.

Even in a bull market, there is a feeling of triumph when a trade goes our way. When this happens, the novice trader feels that getting the trade right is enough in itself and that profits will automatically follow. He is invariably disappointed when profits turn out to be smaller than expected, and often, he will redirect his attention to derivative markets to try to leverage winning trades into larger profits. This in turn exposes him to a higher level of risk than he anticipates. A better solution would be to apply money management techniques to equity markets to grow profits more effectively. This is also an important way of reducing risk.

The entry is just after the 10- and 30-day moving average crossover signal, and it was made at \$5.52. The exit at \$6.37 is also triggered by the crossover of the 10- and 30-day exponential moving average. The return on trading capital depends on how the initial position taken at \$5.52 is added to in October 1998. We buy 6,000 shares for a total cost of \$33,120. If this same parcel were sold at \$6.37 following a simple buy-and-hold strategy, then we collect \$5,100 profit for a 15.3% return on capital employed in the trade.

Here's how risk changes, even with comparable positions and stop-loss exits. Risk, here, is trade risk, measured by the dollar loss incurred with adverse price movements. This includes both capital reduction and reduction in open profit. Risk is directly related to the money management technique selected. By comparing outcomes, the trader can exploit his winning positions more effectively. Let's examine a method to increase profits while reducing risk that I call the grow-up strategy. I use the name to distinguish it from adding to winning positions using constant dollar or constant position size.

When traders first approach the market, they concentrate on choosing the right analytical tools. They believe that if they get this right, profits will automatically follow. As time goes on, however, they realize that success is more closely tied to the way they trade and to trading discipline. They understand analysis tools are a starting point, not an end point. Truly successful traders take the next step by using money management to control risk.

Fund managers and institutional traders have a selection of well-defined money management formulas. Texts by Ralph Vince and Fred Gehm serve well as a good introduction to this area, but

their solutions are less applicable to private traders. The private trader finds generally less information available, and even less of it applicable to portfolios at his level of capital. Take a closer look at the strategies for loading up the winners. Many trading books suggest that loading up winners is a good strategy, and because it is so self-evident, traders spend no time exploring the outcomes of their advice.

My objective is to increase the total position size as the trade continues to move in my favor. The ultimate outcome is to have most of my trading capital tied up in positions making money rather than in positions losing money.

Despite intensive analysis and research of potential and actual trading positions, many traders approach money management armed with a collection of old wives' tales. High on this list of adages is the assumption that traders improve trading outcomes by adding to winning positions. The concept is sound. The way the concept is implemented, however, is often less successful.

Most traders reach for one of two common strategies. The first is to add new positions to a winning trade of the same parcel size (that is, the same number of shares in each new position) as the initial position; the second is to add new positions that are the same dollar size. Both strategies appear successful while the trend continues, but they expose the trader to unexpected risk when the trend reverses.

Daryl Guppy is an author and a private equity and derivatives trader. He speaks regularly on trading in Australia and Asia. He can be contacted via www.ozemail.com.au/~guppy.

Excerpted from an article originally published in the September 1999 issue of *Technical Analysis of STOCKS & COMMODITIES* magazine. All rights reserved. © Copyright 1999, Technical Analysis, Inc.

CLASSIC TECHNIQUES

Matching Money Management With Trade Risk

by Daryl Guppy Manage your trades using technical analysis by identifying risk points as well as setting profit objectives. This Australia-based author shares some of his favorite techniques.

Most of us think trading is a rational process, but many private traders approach trading the same way that other people

approach a wishing well. Those people throw money into the well, make a wish and wait for their wish to come true. In the same vein, some private traders throw money into the market and all they wish for is a profit. Sometimes the wish comes true, but most times, just like a wishing well, it is a waste of money and time. For traders using the market as a substitute for a wishing well, trading is a very emotional experience.

With that in mind, let's take a closer look at the way emotion interferes with good trading and at some of the ways that chart analysis can help us establish trading objectives more effectively.

Most readers will protest that trading is not like a wishing well; we don't just toss money in and hope for fat profits. By and large, we prefer to believe that we are too sophisticated for that. Instead, we analyze the tradable instrument in question, applying sound technical analysis to charts and price data, and then, and only then, make a trading decision. This is a rational process, and if our analysis is correct, the tradable's price will increase when we go long.

Unfortunately, describing the entry decision in pretty words and trading jargon does not alter the trader's intent nor the outcome. Trading based on the wishing-well approach is characterized by poor trade management illustrated by the lack of a plan. Just hoping to make a profit is not a plan. It is an objective, but it tells us nothing about how we are going to get there.

Assume that all the sound analysis has been done, and Woodside appears to be irresistible at \$8.60. As prices tumble toward the chosen entry level, the trader must concentrate on the possibility that his or her decision might be wrong.

Daryl Guppy is a full-time private position trader. He is the author of several books, including *Share Trading: An Approach to Buying and Selling* (with editorial assistance from Alexander Elder) and *Trading Tactics: An Introduction to Finding, Exploiting and Managing Profitable Share Trading Opportunities and Trading Asian Shares: Buying and Selling Asian Shares for Profit*. He is a regular contributor to the Sydney Futures Exchange magazine. He can be contacted via E-mail at www.ozemail.com.au/~guppy.

Excerpted from an article originally published in the May 1998 issue of *Technical Analysis of STOCKS & COMMODITIES*

October 1998 Letters to the Editor
SECURING OPTIMAL F
Editor,

In your July 1998 issue, you published an article titled "Secure fractional money management." The technique uses Ralph Vince's optimal f, and purports to limit the drawdowns that occur when optimal f is applied. But the authors do not consider the biggest problem with optimal f applications.

Optimal f is a random variable. It depends on the largest loss experienced to date and all the trade results to date. Because these variables are subject to large statistical fluctuations, optimal f is subject to random variations. The method set forth by the authors does not address the drawdowns that can occur when future trades are subject to an optimal f different from the calculated value.

A partial solution is to just replace the largest loss to date in Vince's formula with a conservative choice of a larger loss. Still, the resulting optimal f will be exposed to large variations from the trade history employed. The best way to address these problems is to simply rerun the optimal f calculation over several different time frames containing the same number of trades and then average the results for optimal f. That way, the result will be much more "secure."

PAUL H. LASKY via E-mail

-----INSECURE ABOUT SECURE F
Editor,

The article "Secure fractional money management" by Leo J. Zamansky and David C. Stendahl that appeared in the July 1998 issue of STOCKS & COMMODITIES contains a major error. Optimal f is not the percentage of equity to trade, as stated in the article. Optimal f is used to figure the number of contracts to trade:

number of contracts to trade = (equity) (opt f)/-profit of worst trade

The equations that the authors give are correct, but because of their error in thinking, they misapply the equations.

In the example of the three series given in the article, the authors correctly come up with an optimal f of $1/3$. But then to interpret this as being able to buy only three contracts is wrong. Using their interpretation, you could buy only three contracts in each of the series and end up with \$101,500, a terminal wealth relative (TWR) of $101,500/100,000 = 1.015$. This is far from the TWR of 1.185 that is seen in their Figure 3. Using the correct interpretation, you don't buy three but 66 contracts!

$$66.666 = 100,000 * 1/3/(500)$$

You always round down the number of contracts. Then, after winning \$33,000 in the first, the second series gets 88 contracts: $88 = 133,000/(1,500)$. The third series gets 118 contracts: $118 = 177,000/(1,500)$. You end up with \$118,000, giving TWR = 1.18.

The authors' calculation of maximum drawdown of \$7,500 is dwarfed by the actual maximum drawdown, which is $5/3$ of equity, or \$220,000, as it occurs in series 2. The correct value of the secure f is 0.01.

Perhaps the authors became confused with equalized optimal f (see page 83 of Ralph Vince's *The Mathematics of Money Management*). In this method, you can come up with a number that is a fraction of equity to trade with, but this number is neither f nor optimal f . (As far as I know, Vince does not identify this fraction, but it is evident from his equations.) In this method, you use the percentage loss or gain for each trade. In the authors' example, the trades become $(\$500/\$10,000 = \$0.05, 0.05,$

$-0.05)$ instead of $(\$500, 500, -500)$. In this case, the equalized optimal $f = 1/3$; it is the same as optimal f because the buy price was always \$10,000. Now use this equation: fraction of equity = equalized optimal f / - return of worst losing trade

For the equalized optimal f of $1/3$, the fraction of equity is $666.7\% = (1/3)/(0.05)$. Yes, this does mean you are buying on margin. For the equalized secure f of 0.01, the fraction of equity is 20%.

After getting every other interpretation wrong, the authors do come up with the correct final answer of 20%. This leads me to believe that they do have access to a program that correctly generates these numbers for them.

Despite my criticism, Zamansky and Stendahl are to be

congratulated for the idea of secure f. Fixed fractional money management is a wonderful and complex subject that deserves some attention. Too bad this article got the fundamentals wrong.

BRADEN A. BROOKS via E-mail

-----Leo Zamansky and David

Stendahl reply:

Thank you for the feedback about our July 1998 article, "Secure fractional money management."

Mr. Brooks is correct in saying that according to Ralph Vince, the formula is $\text{number of contracts} = (\text{equity}) * (\text{optimal } f) / (-\text{profit of worst trade})$. He is also correct that according to this formula, we buy 66 contracts, not three. However, as we assumed in the article, one contract price is \$10,000. To buy 66 contracts, we need to have enough money to buy 66 contracts at \$10,000 each. That makes $66 * \$10,000 = \$660,000$. And that amount should be only one-third of the total capital available, which, as stated, is \$100,000. The question we are answering is: How many contracts can we buy following optimal f? The answer is $\$33,000 / \$10,000 = 3$. If the contract price were \$500, then the number of contracts to purchase would be exactly 66. If the contract price were less than \$500, then the number of contracts to purchase also would be exactly 66.

Vince, in his book *Portfolio Management Formulas*, states on page 80, "Margin has nothing to do whatsoever with what is the mathematically optimal number of contracts to have on." We emphasize the word mathematically. In real trading, if you need to buy one contract, you need to have a certain amount of money in your account, say x, and if you buy n contracts, you need to have the amount of money equal to $n * x$. In the article's example we call it price, but in reality it is a margin requirement. In other words, the formula for the number of contracts should be adjusted to the price of the contract and be modified to look as follows:

$$\text{number of contracts to trade} = (\text{equity}) (\text{opt } f) / \max [\text{price of contract, } -\text{profit of worst trade}]$$

We agree that we should have specified that. Of course, if you follow this number of contracts purchased, the TWR is not going to be 1.18, because the contract price is too high and does not allow you to buy the number of contracts that would maximize it. However, the lower the price of a contract, the closer you will

come to the calculated maximum of TWR.

We develop tools to use in trading futures. We cannot introduce a calculation that is not based on real trading rules. In real futures trading, the margin requirement per contract always exists and has a very similar meaning to the contract price in the game introduced.

As to the software we use to obtain our results, we use only the software written by us. In fact, readers can download the secure f calculator from our Web site, as mentioned in the article, and run it to obtain values for both secure f and optimal f. This should demonstrate the validity of this approach.

We appreciate the feedback from Mr. Brooks, who makes the important point regarding the difference between optimal f as a mathematical concept and trading using optimal f given the constraints imposed by the reality of futures trading. Quizlet-Answer: (A: Answer, E: Explanation)

A:False:

E: You will never find 2 assets with a satisfying continuous correlation structure (above all at the downside when

there usually is a high degree of correlation). You could even trade a single commodity with a portfolio of patterns and models. It might be easier to breed a custom correlation structure by synthesizing trading models than to find and apply those correlations offered by the markets.

Money Management 10

Money Management, kNOW, DeAmicis
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GENERAL INTRODUCTION

A Brief Overview of the Book, Manual and Software

The Money Software Company, LLC thanks you for your purchase, faith and interest in the kNOW Money Management Program and welcomes you to the arcane but extremely important world of "Risk Management".

Half of investing/trading is knowing what and when to trade. The other half is kNOWing what amount to risk. This manual, book and software seeks to assist and educate the investor/trader on this very important second half of investing and trading, the art and science of risk management.

The value of unique money management techniques (not just stops, pyramiding, percent of account value, etc.) is finally being recognized as being as important as the investing/trading system used. In fact, there are numerous examples where the utilization of proper money management techniques has turned a losing investing/trading system into a winner and taken a marginal or

successful system and substantially increased the return while reducing the financial and psychological trauma of losses/drawdowns. However, the reason more people do not thoroughly understand the subject, is because until recently there was no easy way to test and evaluate different money management techniques. This is the reason the Money Software Company, LLC developed and is now offering the kNOW Money Management Program.

The kNOW (k = \$1,000s-NOW) Money Management Program was designed for both the professional and the less experienced investor/trader in order to allow them to enter individual trades or import investment/trading results (Trade Station, SuperCharts, Excel, etc.) and run thousands of variations and "what if scenarios" on seven major money management techniques. This means that users can now easily determine which money management technique(s) and/or method(s) meet their needs in terms of: maximizing profits, smoothing out the equity curve, diversification for stability, or the reduction of drawdowns. The kNOW Program is applicable for any investing/trading system pertaining to futures, options, equities, mutual funds or any other type of investment with specific profit and loss results.

The money management techniques/approaches discussed include such items as the Optimal f, probability of ruin, Z-scores and Confidence limits, fixed fractional trading, crossing equity curves, optimal risk allocations and much, much more. It should be noted that through out the book/manual/software the term technique and approach refers to the seven major money management methods being discussed while the term option refers to variations or additional things the user can do with the different techniques/approaches. Also, through out the book and manual the term trade and trader are used, this is synonymous with investing and investor and when the term contract is used it is synonymous with a "unit". A single "unit" can be one, five, ten + future contracts, 100 + shares of stock, 100 + options or even 100 + shares of a mutual fund. The user determines the size, value and type of instrument to make up a "unit". When the term system is used it means a defined investing/trading method for getting in and out of the market(s) with specific and historical profit and loss results. It should also be noted that the kNOW Money Management Program is applicable for many different investing/trading systems and time frames but is not applicable for the buy and hold investor.

It is the Money Software Company's sincere hope and desire that through the combination of the money management information and the software tools provided, traders and investors will have everything they need to make informed and educated investment decisions about money management. With the knowledge of how different money management techniques/approaches work with different types of systems, investors and traders can now easily pick the method(s) that best achieves the desired profit and risk objectives.

Thank you again for your acquisition of the kNOW Money Management Program. All of us at the Money Software Company LLC sincerely hope it will be both educational and profitable to you and your trading/investing philosophy and systems.

Book Introduction

"k" as in thousands.

"NOW" as in immediately.

kNOW as in understanding how to make thousands immediately.

Welcome to the kNOW Money Management Program. I once knew a very successful trader that told me the way he decided whether or not to enter the market was to throw two old chicken bones over his shoulder. Depending on how they landed, he would buy, sell or stay out of the market. When I pointed out to him this was not a very reliable entry method, he agreed, but stated that it made little difference because in the long run money management was everything.

Most investors and traders have heard that money management is half of every great trading system. In fact, some traders feel their money management approach or technique is more important than their trading system. As you will soon learn during the reading of this book, the correct money management technique(s) can mean the difference between success and failure. The best investing/trading system with poor money management ends up still being a poor system. On the other hand, a poor investing/trading system with good money management techniques can be a good system. It is even possible, in some cases, to take a losing system and make it profitable with the right money management techniques.

The science of money management is:

1. Knowing how and when to use different money management

techniques and approaches that:

- **Maximize the return on an account**
- **Keeps the risk and drawdown within psychological and financial levels acceptable to the trader.**

2. Knowing the relationships between different money management approaches and different statistical peculiarities of a given investing/trading system:

- **Variability of the results.**
- **Probability of success or ruin.**
- **Correlation between winning and losing trades, etc.**

Many articles have been written on how to maximize the return on an account. These articles have helped bring the science of money management to new levels. However, most of the articles and books on this subject have neglected to discuss the risk and psychological ramifications of maximizing the return on an account. In most cases, maximizing the return on an account will expose traders to a larger risk of going bankrupt or, at the minimum, larger drawdowns. Most people do not want to see a 50%+ drawdown on their accounts, even if it is only a loss of profit. For professional money managers, a 30% drawdown can begin to wreck a career for the simple reason the institutions and individuals that invest with money managers want to see drawdowns only in the 10-15% range.

The kNOW Money Management Program will give you the opportunity to see your investment/trading system analyzed using hundreds of different money management techniques and approaches. Then, when you kNOW the effects of the different money management techniques on your investment/trading system, you can intelligently choose the one that is right for your financial and psychological goals. Please look over all of the material in this manual. It is meant to inform, educate and stimulate you. Also, please give us your feedback, questions, insights and direction so that we can do additional upgrades and new money management articles. We feel that the kNOW Money Management Software Program is a dynamic entity and thus will be growing in intelligence and capability, just like it's users.

**Mike DeAmicis-Roberts - President Money Software LLC
Overview of Applying Money Management**

It is frequently said that money management is half of investing/trading. This is true in the sense that the two major aspects of any investment/trade are when and how much. In reality, much more is going on in an investment/trade. There are psychological aspects to trading and there are execution aspects to trading. If traders are either too scared to trade or they have brokers that consistently get bad fills, it will also effect the profitability of any system. Overall, many aspects come into a solid trading approach and money management is only one piece of the puzzle. But, it's a very big piece. In fact the more professional traders become, the more important money management becomes.

Money management is something all traders can apply. But, in order to apply money management effectively, trader's needs to have a defined system for entering and exiting the market with a historical and accurate profit and loss record. Although some traders don't use a defined system, these days, most traders do have some type of a trading approach/system. Having a well tested trading system helps insure that traders get consistent trading results from future trades, within normal statistical boundaries. It is understanding these statistical boundaries that represents a large aspect of managing an account both effectively and efficiently. The main way traders learn to understand these statistical boundaries is to have a large sample of tested trades. However, what is a correct number of trades to have? The initial sections of this book cover these kinds of issues.

When you have an investing/trading system you feel comfortable with, it is time to start exploring how money management can help improve the results of the system. Often times when one hears about money management, the topics are interesting, but have limited relevance to most traders on a day to day basis. Ideas like "don't trade into an economic report" or "keep 25% of your account in savings bonds" does not tell traders how much to risk on the next trade. This book will deal only with the "nuts and bolts" aspects of investing/trading: how to risk your money on a trading system for maximum gain or risk management and steer away from the more casual money management ideas. The process of applying the correct money management approach and/or technique consists of a few but very important steps (they are not necessarily in order of importance):

Learn the value and benefits of applying different types of money management options and techniques.

- Determine on a personal level what is correct for you. Deciding

how much you are willing to risk and/or bear and how much profit is desired is very important when picking the correct money management techniques and options.

· Learn how to compare and analyze the different money management techniques/approaches. Users of the kNOW Software will always receive a detailed set of results after applying a specific money management technique to a trading system. It is then important to know how to compare the latest results to the results received from previous simulations. There are trade-offs here. It is not as simple as picking the one with the best profit.

The what, why and how of money management is the general format and sequence of this book. This may be out of order for some people. Some traders would rather learn how to compare different money management techniques before learning about them. Or, should deciding what technique you want as a trader be the first step, or the last?

However, it is felt the format and sequence of the following presentation is the most reasonable method for traders and users of the kNOW Program to learn. This book is really a jumping off point for traders to begin analyzing their own systems, and this format will leave them best prepared for their own explorations. Also, there are some peripheral topics that are discussed along the way, that pertain to the subject at hand.

When traders have completed these steps, they will then be well positioned to make the best money management decisions. Decisions that will materialize themselves into increased profits, lower drawdowns and better mental health. (What more could one ask for?)

The first major section in this book is the "what" section. It explains to the reader what the major types of money management are and discusses the advantages and disadvantages of the following seven major money management approaches and techniques:

1.No Money Management - This technique is the default method that many traders use. It consists of entering the market with one unit/contract every time a trading system gives a signal to enter the market. This method has advantages and disadvantages that will be discussed later.

2.Multiple Units/Contracts - This technique is very similar to the one above, but the difference is traders would take multiple units/contracts. Although similar to the No Money Management technique, this method has some definite peculiarities to be concerned about.

3.Fixed Dollar Value for Risk- In this technique traders define how much money to risk on any given investment/trading signal. For example, a money manager may choose to risk up to, but not more than, \$1000 on each trading signal.

4.Fixed Percent of Equity - In this technique, traders define what percent of the account value to risk on any given trading signal. For example, a money manager may choose to risk up to, but not more than, 5% of the account on each trading signal.

5.Adjust Trading on Win or Loss - This technique is often called the pyramiding (up or down) or Martingale (normal or reverse) approach. In this technique, traders determine how much to trade after successive wins or losses. For example, after losing trades, they may decide to double up on the next trading signal, to recoup the losses.

6.Crossing Equity Curves - With this technique, traders define a long and short average (3 and 8 for example) of the trade profit and losses. When the short average is greater than the long average, it means the system is doing better than it did in the past. Based on this information, they would enter the market. If the short average is below the long average, they would trade. The profit or loss from all trading signals, whether taken or not, are calculated in the average.

7.Applying the Optimal f - This section goes over what the Optimal f is and how to apply it as a money management technique. Many people are familiar with this approach, but it does have some dangers to watch out for.

Upon completion of this section, traders will know most of the "nuts and bolts" about different money management techniques

and variations and options to these techniques but even more important, they will kNOW about their own trading systems. Traders will also be able to determine the profitability and risk factor for their personal trading systems by utilizing any one or all of these money management approaches/techniques.

But, before traders try and figure out the profit potential of their trading systems, they should first try and determine what is right for themselves. This is the next important section in this book and the shortest. Basically, in order for traders to accurately choose the best money management technique(s), they need to decide what kind of risks and rewards they want or are willing to endure. Each one of the money management techniques discussed can impact and transform a trading system differently. Some of the techniques will allow traders to make a very high profit, while others will allow the traders to minimize the drawdown on their trading system. A system may have a high probability of ruin, but incredible profit values. In order for traders to pick the best method, they will need to be honest with themselves on how they want their accounts to grow. Some people need security, others need rapid growth. Who knows what you need, better than you?

Once traders are comfortable with what they want, they can then move on to the sections of this book discussing how to compare different techniques and trading systems. Systems can and should be compared in many different ways. No one ratio tells the whole story. Astute traders will look at their trading possibilities from several different angles, before deciding what is best for them. This section of the book looks at nine different ways to compare systems:

- 1.The total profit
- 2.The drawdown
- 3.The profit / margin ratio
- 4.The profit / drawdown ratio
- 5.The profit / time ratio
- 6.The percentage of winners
- 7.The Z-score and confidence limits
- 8.The Optimal f
- 9.The probability of ruin

Each of these methods for evaluating results has different advantages and disadvantages. Traders should be aware of these

differences before using any of these methods to evaluate a trading system. Only after using several or all of these techniques can traders make an informed and intelligent decision for or against the value of a trading system. Not looking at a trading system's results from several angles may leave traders in the unhappy situation of picking the wrong approach. Choosing the wrong approach could leave traders with a less fulfilling and unprofitable trading experience.

Choosing the correct approach will allow traders to feel more comfortable about their trading. This comfort can manifest itself by allowing traders to focus on the other aspects of trading that effect the profitability of a system, such as the psychological aspects for example. Overall, the more comfortable traders are, the better.

Periodically throughout this book, references will be made to what is still not known about money management. This book contains a great amount of useful information on the application and value of money management but it is not a definitive encyclopedia on the subject. It is very obvious there is still much to be learned about the arcane subject of money management. For example, is there a way of knowing in advance which money management method will work best with a particular trading system? There probably is, but the authors of this book do not know how to determine this and most traders probably do not know either. Or, is there a way a money management technique can tell if a trading system has broken down? Another question, yet to be answered. It seems there is a great deal more to learn about the theory of money management than is known at this point in time.

The same three or four trading systems have been used as examples throughout this book. It is the intent of the authors not to deceive the reader with a trading system that is optimized for a particular money management technique and thus give the reader the wrong impression. Additionally, these systems are included in the software, so the reader has the opportunity to check them out if desired.

In summary, this book is a tool for traders to receive the basic knowledge that is required to start exploring the principals of money management. The software is the tool that will allow traders to take this knowledge into the real world and in turn take this process of exploration to places this book hasn't gone to.....yet.

You Have A System Bias Towards Mechanical Systems? In order for traders to take an effective approach to money management, the trading results must have some consistency or some common denominator. Usually, the easiest way to achieve this end, it to have a mechanical trading system. A mechanical trading system allows traders to take subjectivity out of their trading. It is assumed, at some deep level, that a truly mechanical trading system has a particular set of results associated with it. And, it and to the extent that past situations are similar to the future, this mechanical system will perform in a similar manner, in the future. Based on this assumption, it is possible to collect data on a trading system (percent win, average profit per trade, etc.) and expect it to perform, within statistical boundaries, in a similar manner.

It would be very hard to be a professional money manager who didn't make this assumption. What's the alternative? It is hard to believe that pure luck has propelled some traders to greatness. We are inclined to believe in trading systems because they seem to work. Many systems only work for a short time, but others seem more solid.

Humans excel at finding patterns. Humans excel at following patterns. Perhaps this is why trading systems work?

An example of a mechanical trading system might be: "Enter the market with a long position and a protective stop loss of 200 points, when a 10 period moving average crosses up and over a 30 period moving average of the closing price. This is a fairly simple form of a trading system. However, today's systems can also be complex neural networks using genetic algorithms to filter the final entry and risk parameters. Traders may never be able to verbalize what exactly triggered the trades, other than "My software told me." Luckily, it doesn't matter to the traders' accounts if they know why X follows Z, or why this price action leads to that market move. It only matters to their accounts when traders apply a trading system to make money.

Trading systems spring to mind easily, almost intuitively. "When the market does X then it usually goes up." Luckily, there are many pieces of software on the market that can help traders automate their trading systems. Once a particular system is automated, traders can run it through a couple of years of historical data to see how well that particular pattern worked. The process of automating a system is important for two main reasons.

1. Automating a system takes the subjectivity out of the results. For example, if traders know that a particular system wins 73% of the time and the system has been thoroughly tested; it is reasonable to assume this system will continue to perform in this general manner. (If traders begin to "second guess" the system, they invariably make things worse. Unfortunately, it is Murphy's law and a cold reality to many traders, who have chosen to second guess their systems and missed the biggest winners.) In short, having an automated system helps insure that a well-tested trading system will continue to perform the same way.

2. Having an automated system, with well-tested results, gives traders specific information about the characteristics of their systems. If a trading system has been tested thoroughly, it is possible to find out unique characteristics about that system. (For example, Confidence limits, standard deviations, Z-scores, POR, etc.) When this is known, it is possible to find ways to exploit these unique characteristics. There are techniques for risking capital that can be specifically tailored to a particular trading system, but only thorough testing of that system will yield reliable data. These "specifically tailored" money management techniques can help traders get more profit, for less risk, from the same old system.

Having an automated system is very important, but it is not absolutely necessary. It is possible that discretionary and/or fundamental investors/traders could have a long enough trading record to show consistency. For example, if discretionary traders have a large number of recorded trades (100 or more, as an example); it is reasonable to assume they will have a reliable trading record. The same thought process might apply to a system that re-optimizes itself every 10 trades. The point is, if there is a sufficient history to develop reliable information on the trading system, then it is time to consider money management.

The main goal is to have an investment/trading system that will perform the same way in similar circumstances. At the deepest level, a system is an attempt to characterize a peculiarity about the market. The "peculiarity" could be the monetary manifestation of the fear and greed of the trading pit or the method by which bank computers hedge their stock holdings or even weather patterns over the mid-west. It is very important that traders learn if there is a peculiarity, if it is consistent and how to exploit it. Part of exploiting and maximizing a trading system is knowing how to risk your money.

A statistical winner?

It has frequently been published, especially in books on gambling, that there is no use trying different money management systems if the system is not a statistical winner. This means that on a statistical basis, at the end of a trading period, you should have more money than you started with. With this definition, it can be stated that a system is a statistical winner when:

$$(\text{Average winning trade}) * (\% \text{ winners}) > (\text{Average losing trade}) * (\% \text{ losers})$$

Although many books say there is no use in trading a statistically losing system, there are exceptions to this statement. When traders have a statistically losing system, most conventional forms of money management will not work. This is because they rely equally on all the trades in a system to factor into the account value.

On the other hand, when traders have a statistically losing system, it may be possible to implement strategies that do not rely on all the trades equally. For example, there are trading systems that tend to always have two losers or winners in a row. (This can be determined by interpreting the Z-score and Confidence limits of a system. This is discussed later in this book.) If this is known about a system, it is possible to devise a money management approach that takes a smaller position after a loss and a bigger position after a win. The results of this approach may minimize the losses and actually turn a losing system into a winning one!

There are several other money management techniques and methods that do not rely on all the trades in a system equally. Any of these methods could conceivably turn a statistically losing system into a winning system. However, they can just as easily change a winning system to a losing one. By not relying on all of the trades equally, traders are opening up a new game in money management. These new approaches need to be carefully evaluated with a good dose of common sense. This book will explore these different approaches in detail.

Getting to a deeper point, why would traders want to try to turn a losing system into a winner with money management? There are several reasons why traders may want to try to improve a loser rather than trying to develop a winning system. The main reason traders may want to use this kind of approach is to

compensate for drawdown periods in another system. Many successful traders have complimentary systems that compensate for each other's drawdown periods. It is possible that one of these complimentary systems can be a losing system. However, when combined with a winning system, it makes for a smooth equity growth.

One more fact that all traders are familiar with is, really good trading systems are hard to find. Anybody who has tried to look for systems knows it is an emotional game. One day you have found the holy grail Holy Grail to trading. The next day, after some additional testing, you find the system lost a million dollars between 1985 and 1996. You go back to the drawing board and start over again. On the other hand, OK systems are not that hard to find, with serious looking. There have been many traders who found a system, did thorough and complete testing, only to find out that it earned 7% a year. "I can't quit my job for 7% a year", they say, then try again, more frustrated then before. This is a pity, because good money management can often make a system like this very feasible.

Given the fact that good trading systems are hard to find, it becomes necessary to effectively use money management techniques to improve the profitability of an OK system, as much as possible. Using solid money management principals allows traders to squeeze more out of their same old system, often times with less risk. Traders can be sure that with ever increasing computer power pointed at the market, people will become faster at finding market peculiarities and exploiting them into profitable trading systems. But finding the trading system is the small part of the problem, managing the risk to the account will be the major separation between casual traders and the institutional ones, the winners from the losers.

Consider the definition of a statistically winning system again for a moment. $(\text{Average winning trade}) * (\% \text{ winner}) - (\text{Average losing trade}) * (\% \text{ losers})$

Please keep in mind, this does not account for any costs, such as commissions, slippage, overhead, etc. When these numbers go into the formula above they can often shift a winning system into a losing one. Many traders often do not take the commissions and slippage in to account when evaluating systems. It can be very important. It can also add up quickly. If you are paying \$50 in commissions per turn, it only takes 40 trades to spend \$2000.

These kinds of costs can put a \$20,000 account down 10%, before calculating any profit or loss from the trades. On top of this kind of overhead, astute traders will also account for the day when they are caught in a limit move or when the market gaps way past their stop on the open of the next day. Whatever the case, these are real costs that can make or break a system. With this in mind, the definition of a statistically winning system becomes:

$((\text{Average winning trade}) * (\% \text{ winner})) - (\text{all other costs})$
 $(\text{Average losing trade}) * (\% \text{ losers})$

What Is a Valid Sample?

In order to evaluate a trading system, it is necessary to have a sufficient number of trades to make a valid sample. This much is common sense. Knowing how many trades are necessary to make a valid sample, is not. Some traders say 10 while other say 1000. This is interesting, because to some extent, both of the traders are right. The answer lies in the definition of the word "valid." By valid, these traders mean the ability of the sample trades to predict future performance of the system.

Starting with the most conservative approach, some traders feel they need to see 1000 trades before they truly know the performance of a trading system. One's first reaction to this comment may be, "Wow, that's really conservative!" Over time, however, this point of view becomes more reasonable. This is especially true when one considers how many people, including the authors, have tried a tested trading system real time, only to watch it crash. In an informal way, there is some scientific data to back up the conclusion that a very large number of trades are needed. Those of you who are familiar with "Random Walk" indicators know that the market is moving in what appears to be a random way a fair amount of the time. Given that the market is random, at least some of the time, it is reasonable to assume the results from many of the trades taken have a random element to them. Therefore, it is necessary to have a very large number of trades in order to begin to see the actual effects of a trading system on an account, if many of the trades in the sample are random wins or losses. It is also very important to know how the system behaves independent of the market or other conditions. Also, it may take a larger number of trades to see the effects of randomness on a trading account.

Of course, the Random Walk theory may be bunk, but it does give astute traders an interesting perspective on the market and how to view the success or failure of a particular trade. There is

one other thought on randomness, that could lead traders to believe a large amount of trades are necessary. It is reasonable to expect that if you flip a coin 1000 times, at some point it will come up "heads" 10 times in a row. If this happen within the first 20 flips, then a trader would not have an accurate prediction of the probabilities of flipping a coin. When these kinds of statistics are applied to money management, it becomes clear why a large sample of trades is necessary. It can take a large sample of trades just to figure out what is normal.

Taking a slightly different perspective, scientific traders will often state they need at least thirty five trades to develop any results that are statistically valid. This belief comes from mathematical proofs associated with standard deviation. As a general rule of thumb, safe traders will want at least thirty trades when testing their trading systems.

Other traders, for example, may utilize trading systems that rely on odd seasonal or market patterns and thus have very few trades. In cases like this, there may only be ten examples of this particular pattern. Is it reasonable to believe that a trader can have a reliable system with only ten samples? Who knows? It seems possible. The answer lies in whether or not the system/sample can reasonably predict future action. This is the area where money management drifts from science to art. It will take the discretion of the traders to ultimately decide this question.

The following represents thoughts that should thing that need to be considered when examining systems with small sample sets:

1.Are the market conditions similar for all of the trades? For example, was the market trending in all of the examples, or did the entry/exit signal happen before a major economic report. If the short term market conditions are similar, traders can have a degree of confidence that results are reliable. On the other hand, if some of the signals are from trending markets and others are from choppy markets, the system may not be reliable, even though other statistics look good. Also, this kind of analysis can help traders gain additional insight into their trading systems.

2.What is the distribution of the profitability of the trades? If all the winning trades seemed to make about the same amount of money, then traders can have a higher degree of confidence about the system. If the profitability of the trades is spread out over a large range, it can be a signal that the system is random.

3.To some extent, you can use the percentage of winning trades as a barometer. However, this is not "fail safe" necessarily a good method either. As mentioned above, even a system of 50% winners goes into periods where it may lose ten in a row. It is clear there are many different perspectives on how many sample trades are required to make a reasonable test set. As mentioned above, this is one of those areas where art and experience meet science. One of the few things that can be said with certainty is that the more trades one has in their test set, the more accurate the results will tend to be. The more accurate, the better. To repeat what was said above, the answer lies in whether or not the system/sample can reasonably predict future action.

Evaluating Different Money Management Strategies

What is Money Management?

Let's define "money management" in a way that has utility to everyday traders. Money management is a way of deciding how much of an account to risk on a particular trading opportunity. Setting aside the psychological aspects, one half of trading is deciding when to enter the market. The other half is how much to risk. In many ways these two aspects of trading are both related and separate. Traders can receive a signal to enter the market and decide to risk three contracts or four. But the trade either wins or loses in an absolute sense and it doesn't make any difference how many units/contracts the traders risked. In this sense, the two halves of a trade are independent of each other. On the other hand, the market entry half and the money management half of a trade can be tightly linked. Consider a trading situation where traders can only afford a stop loss of \$500, although \$750 fits perfectly below a market resistance level for a stop. The traders are then forced to put the stop at \$500 due to the amount of money in their account. In this case, the money management approach, can influence the success or failure of the entry.

Whether or not your money management approach effects your trading system, it will always effect your account value. Every trade represents a risk of making or losing money. Therefore, in this respect, every decision to enter the market effects the account value in some way. The method of money management that traders decide to use determines how much their accounts are effected. The basis of these decisions rely on the wants and needs of the traders. For example, some traders might want to maximize profit while others might want to minimize the risk to an account. Most of us are in the middle somewhere.

It is my experience most traders never make informed decisions about money management. Instead, most of them fly by "gut feel." This is not a bad approach in itself; some people are good "gut" traders. But for the rest of us, going on gut feel does not give us any tools for analyzing if what we are doing is right or wrong. When we begin to examine different approaches to money management and begin to understand the dynamics of a particular trading system, we can make decisions that maximize the growth to an account while keeping the risk to a minimum.

Despite the fact that money management is half of a trade, many traders still spend five times more effort reading about trading systems than learning about the principals of sound money management. The fact there are very few good articles or books on money management is partially to blame for this disparity of effort. However, the major part of the blame lies with the traders. Despite the fact that money management can greatly effect traders' accounts, very few of them focus any effort on improving their knowledge in this area. Instead, most traders focus on timing the entry or exit to the market as a way of maximizing profit.

This is an easy trap to fall into. Firstly, the common tools for system development usually only allow for limited money management techniques/approaches, if any at all. This situation denies traders the tools to really evaluate different money management techniques/options. Secondly, the calculations involved are usually very time consuming. To use a simple example, imagine if traders wanted to know the return on their accounts if they risked exactly 10% of the account value on each trade. This kind of simple problem could take a large number of calculations to work out on a calculator. These situations and others, leave traders with very few easy options for evaluating different money management techniques and options, other than a few books and this software. Please Note: There are other money management software programs commercially available (some in excess of \$10,000.00) , but to the best of the authors' knowledge, none of them offer the total capability found in the kNOW Program.

Selecting A Money Management Method To Use?

Let us start with the negative side of things. Selecting the wrong money management techniques/approach can have a detrimental effect on your trading performance. In light of this consequence,

there is only one reliable way to come to a valid conclusion, testing different approaches. To some extent, different mathematical properties (% winners, average loss, etc.) may point to certain methods over others. However, the testing of different money management techniques, (just like in trading system development), is the most reliable way to understand what to expect from a trading system. In the following chapters, this book will go over various considerations and optional methods when reviewing the results of the different money management techniques/approaches.

When developing the results for a particular money management technique and approach, traders should use the same methodology as in system development. This method takes the scientific approach to testing. First, traders should start with two or more data sets, all coming from the same trading system. Using the first data set, traders should develop the best money management methodology for that particular timeframe/system. Once they have reached some type of conclusion as to what money management technique/approach is the best for the initial data set, it can then be tested on the other data sets. The results from the first data set should then be discarded. But, this is often hard to do, since the numbers look so good. However, this first data set is naturally skewed to look good, because the goal was to try to find what worked best (optimization?). The results from the other data sets will be the most trustworthy data and will determine the true value of the money management technique(s) tested.

Many traders do not go through this process when testing their trading systems or their money management approaches. As a result, Therefore, back tested systems that may have worked wonderfully for the last couple years, fall apart in real time. The tight curve fitting of the past often does not match the future. (Please see the section on Optimizations.)

Selecting the correct money management approach will take time to test and evaluate. It will also cost money if it is done wrong. On the other hand, if serious traders take the time to find the best money management technique(s) and/or system, it will be one of the best investments they ever make. In other words, you will have to work to find out what money management approach works best for your style, goals and trading system. No traders like the additional work involved, but trading is like anything else in life; the people who work the smartest and hardest

usually come out on top.

Often smaller investors will only be able to afford to take one unit/contract on any trading system signal, due to the size of their account. These traders feel that because of this fact, their money management options are limited. This is a legitimate concern, because the initial size of the account can effect how much money there is available to trade. However, it is important to keep in mind there are alternatives. For example, traders can take partial contracts on the Mid-Am or even choose not to trade at all. There is no reason why traders should open themselves up to undue risk, due to a lack of capital. If traders are in a position where they can not regulate the risk to their accounts within acceptable bounds, then they should stop trading. Traders who chooses to stop trading and wait until they have more expendable capital will usually be happier in the long run, than traders who are willing to risked it. There will always be traders that take great risks and win. The rest of us will read about them and wish we were as lucky. The reality is that for every person who pulls off a trading miracle, there are twenty that didn't. Also, it is easier on one's own mental health, family support group and ultimately the wallet, to play it safe.

An IMPORTANT Distinction

When evaluating money management techniques/approaches and, to a smaller extent trading systems, it is important to note that there are two types of processes effecting the values. It is convenient to think of these as linear and non-linear factors. Linear factors have results such as:

1. Gross profit
2. Total profit
3. The dollar value of the drawdown

These kinds of attributes of money management techniques/approaches, will grow in a linear fashion as traders risk more or less money. This can be demonstrated with a simple example. If traders take one unit/contract, they will make \$X amount of money. If traders take two units/contracts, they will make twice that amount of money. This is pretty intuitive. The problem arises because many traders assume that all money management techniques/approaches are linear.

Non-linear factors are results such as:

1. Percentage growth of the account
2. Probability of ruin
3. Standard deviation of the trades

These kinds of attributes do not grow in a linear manner. Using the example above, if traders take a one unit/contract position they may have a probability of ruin of X%. If traders take two units/contracts the probability of ruin may be up to four times as high. The reason for this is that the probability of ruin is tied to the success of the trades and the account size. (More details on the probability of ruin are given later in this book.) The same kind of reasoning applies to calculating the percent growth of an account.

These non-linear factors are very important when comparing various money management techniques/approaches, because it is often these factors that have more to do with a trader's success of traders than the profitability of the their systems.

To a large extent, it is not understanding, or even recognizing, there is a difference between how the linear and non-linear factors interact that causes many traders to fail. Unfortunately, most traders, and the tools they use are primarily interested in just a few basic numbers, profit and drawdown, and automatically assume they are all linear. The truth is, depending on the method of money management utilized, there are cases when the profit and drawdown are not even linear.

Below are two very relevant examples of how these non-linear aspects of money management can effect trading:

Example 1:

Assume the starting account size is \$25,000 and the traders are trying to find out what percent of their account to risk on each trading signal the system gives them. This "percent of the account" will represent a different amount of money for each trade, since the account changes value with every win or loss. Traders will need to risk up to, but not over that amount of money. Therefore, on the first trade, if the traders were going to risk 6% ($\$1500 = 6\% \text{ of } \$25,000$), the ideal trading signal would have a risk of \$1,500. (Traders would not take a trading signal that had a risk of \$2000 since it is over the allotted risk. Alternatively, if the risk is \$500 per unit/contract, traders would take three contracts to reach the \$1500 risk goal.)

The following table shows the results of risking different percentages of an account on this type of money management

approach:

Although the traders grew the percent to trade in a linear fashion (2%, 4%, 6%, etc.), there is nothing linear about the results. As you can see, risking 4% was the best approach for the traders in terms of profit. Risking more or less than 4% resulted in a lower profit for the traders. This kind of example shows that if traders take additional risk in a linear fashion, the return on the account is not necessarily linear. Traders should keep this in mind when exploring and/or comparing different money management techniques/approaches.

Example 2:

If we lived in a perfectly statistical world, we would all have 0.78 of a house, 1.5 children and 0.34 dog. But this is not reality. Trading systems and their results happen within a range of values. For example, you can expect a system to be within plus or minus 15% of your expected results after a sufficiently large number of examples. The correlation of your system within a particular range of expectation is one of those non-linear factors. This is not usually one of the things that most traders consider. However, understanding this principal helps traders to know if their trading system has "broken down." To illustrate this point consider the following trading system:

Percent (%) winners = 50%

The average win = \$100

The average loss = \$ 50

Average profit per trade = \$ 25 (by deduction)

In a perfectly statistical world, traders could expect to make \$25 per trade. Therefore, after 100 trades, the traders would expect to make \$2500. Unfortunately, this is not a perfect world and as traders use this system, they will probably find that the real-time results do not match the hypothetical results. The more trades there are, the less chance traders will end up having a perfect statistical outcome. To simplify the example, consider tossing a coin four times. You know that half the time you should get heads and half the time you should get tails. But statistics show us that if you flip a coin four times you will only get two heads and two tails 38% of the time. The other 68% of the time you will get some other outcome after four flips.

If we apply this back to our trading example above, statistics

allow us to state the following:

As the number of trades increases

1.The total profit (real-time results) from a system will get closer to the expected profit (\$25 per trade) as a percentage.

2.The total profit (real-time results) from a system will get farther from the expected profit (\$25 per trade) as an actual number. In other words a little error adds up each time.

The goal of this section is not meant to be a primer for statistics or standard deviation. This is used purely as an example of the fact that there are linear and nonlinear forces effecting your money management choices. Where you will probably end up and where you should end up after trading, do not have a linear correlation. This book and software will try to highlight these factors. In fact, it is the primary value of the software to allow you to understand these factors for your system.

Overview of Money Management Methods

This book and the accompanying software go over seven different techniques and approaches of money management:

1.No Money Management - This is the default method most traders use. It consists of going into the market with only one unit/contract every time a trading system gives a signal to enter the market.

2.Multiple Units/Contracts - This method is very similar to the one above, but traders may take multiple units/contracts. Although similar to the No Money Management technique, this method has some peculiarities to watch out for.

3.Fixed Dollar Value for Risk- In this technique, traders define how much money to risk on any given trading signal. For example, a money manger may choose to risk up to, but not more than, \$1000 on each trading signal.

4.Fixed Percent of Equity - In this technique, traders define what percent of the account value to risk on any trading signal. For example, a money manger may choose to risk up to, but not more than, 5% of the account on each trading signal.

5.Adjust Trading on Win or Loss - This technique is often called the pyramiding (up or down) or Martingale (normal or reverse) method. In this approach, traders determine how much to trade after successive wins or losses. For example, after a losing trade,

traders may decide to double up on the next trading signal to recoup the losses.

6. Crossing Equity Curves - With this technique, traders define a short and a long average (3 and 8 for example) of the trade profit. When the short average is greater than the long average, it means that the system is doing better than it did in the past. Based on this information, traders will enter the market. If the short average is below the long average, traders will not trade. The profit from all trading signals, whether taken or not, are calculated into the average.

7. Applying the Optimal f - This section goes over what the optimal f is and how to apply it as a money management system. Many people are familiar with this approach, but it does have some dangers to watch out for.

8. There is also a way to check for the best diversification plan across a set of instruments.

Organization of Following Sections

In the following sections, three different kinds of typical systems will be used to contrast the different types of money management techniques. They all make about the same amount of money when traded on a single unit/contract basis. In these examples, the trading accounts all start with \$25,000. The graphs shown below are the accounts' equity, while trading:

1.) System A - This system wins about 76% percent of the time. The risk per trade is set at \$500 dollars. However, this system typically has small wins. This is similar to the type of systems that traders often develop for choppy markets or for some forms of intra-day trading.

2.) System B - This is the "typical" system. It wins about half the time. The winners are good and the losers are OK. Often, systems that use stochastics for entry and exit will give these kinds of results.

3.) System C - This is a typical trend following system. It has many losers and a few large winners. This system wins about 33% of the time, but the profit on the winners is almost double the two systems above. The results might be similar to systems that use large moving average crossovers or entering the market at Fibonacci retracements.

Different money management approaches will be applied to these three systems to illustrate some of the subtleties of the different money management techniques/approaches. However, It is important to keep in mind that the following are just examples. The intent is not to show which method is best, but to give the reader some insight into the different money management approaches, how they can effect the account, and to show the dramatic effects different types of approaches can have on an account.

No Money Management Technique

The simplest form of money management is basically no money management. Additionally, it is the type of money management that most small investors use. In this technique traders buy or sell one unit/contract. No adjustments are made for other factors, such as the amount of risk per trade, the amount of money in the account, the previous successes or failures, etc. This is also the type of money management that most trading system software programs default to.

The initial account size is one of the most important considerations traders can make if they choose to use this technique/approach. Depending on the account size, this technique can vary from being very dangerous to being a very safe way to approach money management. In short, the bigger the account size the better it is. When traders have small accounts, by definition, they are risking a substantial amount of the account on each trade. Many small accounts can not handle two or three losses in a row. As a result, a small account size can dramatically increase the probability of ruin for an account. (Probability of Ruin is discussed in it's own section later in the book.)

If the account size is large enough, there is little one can negatively say about this technique/approach. However, usually there is a substantial opportunity to make more money using other types of money management techniques. For example, with the No Money Management Technique, traders have do not have any way to regulate the risk or any method for compounding returns.

Here are the No Money Management Technique results for the various systems previously outlined. They are provided primarily as a reference point against the other money management

techniques and to give the reader a feel of how normal these systems are.

SYSTEM A

System Information

Type : All trades

Total Profit : \$ 9490.00 Gross Profit : \$ 19460.00 Gross Loss : \$ (-9970.00) Number of Trades : 45 Number of Wins : 25

Percent Win : 56%

Number of Losses : 19 Long Num Trades : 22 Long Number Win : 13 Long-Percent Win : 59% Short Num Trades : 23 Short Number Win : 12 Short-Percent Win: 52% Average Trade : \$ 210.89

Average Win : \$ 778.40 Biggest Win : \$ 1840.00 Average Loss : \$ (-524.74) Biggest Loss : \$ (-2445.00) Num Avg Trade : 18 Num Avg Win : 11 Num < Avg Loss : 1

Account Information:

Starting Account Value: \$ 25000.00 Highest Account Value: \$ 37060.00 Final Account Value : \$ 34490.00 Lowest Account Value : \$ 24505.00 Starting Percent : 100%

Highest Account Percent: 148%

Final Percent : 138%

Lowest Account Percent : 98%

Worst Drawdown on a Dollar Value Basis Drawdown as Percent : -08%

Drawdown From : \$ 37060.00

Drawdown Dollar Value : \$(-2860.00) Drawdown To : \$ 34200.00

SYSTEM B

System Information

Type : All trades

Total Profit : \$ 5315.00

Gross Profit : \$ 18565.00

Gross Loss : \$ (-13250.00)

Number of Trades : 41

Number of Wins : 19

Percent Win : 46%

Number of Losses : 22

Long Num Trades : 19

Long Number Win : 13 Long-Percent Win : 68% Short Num Trades : 22

Short Number Win : 6

Short-Percent Win: 27%
Average Trade : \$ 129.63
Average Win : \$ 977.11
Biggest Win : \$ 3500.00
Average Loss : \$ (-602.27)
Biggest Loss : \$ (-2050.00)
Num Avg Trade : 36
Num Avg Win : 19
Num < Avg Loss : 7

Account Information

Starting Account Value: \$ 25000.00
Highest Account Value : \$ 30315.00
Final Account Value : \$ 30315.00
Lowest Account Value : \$ 20575.00
Starting Percent : 100%
Highest Account Percent: 121%
Final Percent : 121% Lowest Account Percent : 82% Worst
Drawdown on a Dollar Value Basis
Drawdown as Percent : -18%
Drawdown From : \$ 29280.00
Drawdown Dollar Value : \$ (-5200.00)
Drawdown To : \$ 24080.00
SYSTEM C

System Information

Type : All trades
Total Profit : \$ 6847.00 Gross Profit : \$ 20917.00 Gross Loss : \$
(-14070.00) Number of Trades : 41 Number of Wins : 12
Percent Win : 29%

Dumber of Losses : 29 Long Num Trades : 19 Long Number Win :
8

Long-Percent Win : 42% Short Num Trades : 22 Short Number
Win : 4

Short-Percent Win: 18% Average Trade : \$ 167.00 Average Win : \$
1743.08 Biggest Win : \$ 3500.00 Average Loss : \$ (-485.17)
Biggest Loss : \$ (-1200.00) Num Avg Trade : 47
Num Avg Win : 25
Num < Avg Loss : 25

Account Information

Starting Account Value: \$ 25000.00
Highest Account Value : \$ 32447.00
Final Account Value : \$ 31847.00 Lowest Account Value : \$

23900.00

Starting Percent : 100%

Highest Account Percent: 130%

Final Percent : 127%

Lowest Account Percent : 96%

**Worst Drawdown on a Dollar Value Basis Drawdown as Percent :
-20%**

Drawdown From : \$ 32110.00

Drawdown Dollar Value : \$ (-6410.00) Drawdown To : \$ 25700.00

Multiple Units/Contracts Technique

This form of money management is almost identical to the No Money Management Technique described above. In terms of directions to your broker, it would only be the difference between buying or selling additional units/contracts at the same time, on the same trading signal.

As mentioned before, doubling or tripling the amounts risked can have a non-linear effect on the account in terms of the probability of ruin, plus other factors. Therefore, if you are considering this technique/approach, it is best to run your trading system through a number of scenarios using the kNOW Software, to determine how it might be effected.

One of the concerns with increasing the number of units/contracts taken is the drawdown. On the positive side, the profit increases are in a linear fashion. Therefore, in this respect, it is easy to estimate. On the negative side, the drawdown also increases in a linear fashion. If traders using this approach want to increase profits, they do so at the expense of increased drawdown. The point is, that although this may be an effective method for increasing the profitability of a trading system, it is frequently not the most effective way for controlling the drawdown. What many traders fail to account for is how bad drawdowns can effect their overall track record. If traders have any hopes of becoming professional money managers, and many do, keeping the drawdown to a minimum is one of the most important considerations, of any trading system. Often when investors, especially institutional investors, are looking for fund managers, having a low drawdown is more valuable/important than high returns. This may not be a concern for all the readers. However, to the extent that good money management is planning for the future, it is important to consider one's potential long long-term goals. You can't erase a track record or get money back after losing it.

Risking a Fixed Dollar Value for Each Opportunity Technique

Another money management technique/approach often used on the markets is to risk a fixed amount of equity on each trading signal/opportunity. This technique allows one to efficiently play the odds associated with the percentage of wins and losses in the account. For example, if traders started with a \$25,000 dollar account, they could decide to risk \$1000 on each opportunity. Traders would then take as many units/contracts necessary, to come as close as possible to a \$1000 risk for that particular opportunity, without exceeding the desired risk. If a trading opportunity has a \$1000 risk then they would only take one unit/contract. If another trading opportunity has a \$500 dollar risk then two units/contracts could be taken. If a trading opportunity has a \$750 dollar risk then traders would only take one unit/contract. If there was a \$1500 dollar risk then the trade would be skipped completely.

This approach will give traders the confidence of knowing they will have a minimum of twenty-five trades in which to let their system "do it's stuff". This can be advantageous for some trend following systems that may only win 30% of the time. Additionally, using the values for how much to risk per trade and knowing the percentage of wins and losses can allow traders to generally predict the potential drawdown to their accounts. For example, if traders have a system that wins 50% of the time it would not be unusual for that system to have four or five losses in a row, given enough trades. Knowing this, will give the traders a reasonable expectation of losing at least \$4,000-\$5,000 in a run.

It is important to note that this type of money management technique may be filtering the trading system. In the previous example given, the traders would only risk \$1000 per trade and if a signal were given that has a risk of \$1500, then the trade would be skipped. This may seem like blasphemy to system traders that know they should take every signal. In a sense they are right. As discussed above:

As the number of trades increases:

1. The total profit (real-time results) from a system will get closer to the expected profit as a percentage.
2. The total profit (real-time results) from a system will get farther from the expected profit as an actual number.

What this means is, that by skipping this trade, traders will be farther from the expected profit, as a percentage. Is this bad? Maybe? However, if the traders continue trading, the effect of skipping a trade diminishes.

OK, so much for statistics. It is not always reasonable to let the desire to be in every trade force one into a trade that may be a large loss, which in turn greatly increases the size of the average loss. (The average loss value correlates directly with the probability of ruining an account). Filtering out some trades based upon trading signals derived from money management concerns, can be justified. However, in order to do so, it is necessary to have a large enough number of examples in the test set, (after the big ones have been filtered out), to give a valid sample/results.

This technique also allows traders to get more leverage out of their trading signals with a smaller amount of risk, by allowing them to take multiple units/contracts. Signals that have a smaller risk can be entered with more units/contracts than signals with larger risk. This allows traders to get more "bang for their buck". In other words, this allows traders to make more money out of the same type of market move, utilizing signals that have a smaller risk. In this sense, the traders have managed to put a limit on the possible losses, while leaving the potential for profits unlimited.

A few money managers use this technique/approach with success. It generally allows for a very clean and easy way to calculate the potential risk that is involved. Consider the following trading system: it wins 50% of the time and the risk is \$1000 per trading signal. Since we know that in a 50% system, there is about a 1% chance of getting seven losses in a row, astute traders can expect the worst drawdown to be about \$7,000. It is very convenient to be able to quantify the worst potential drawdown prior to trading real time. If for no other reason than it allows one to be mentally prepared to lose the money.

However, there are two main drawbacks to this technique:

1. This money management technique/approach filters the trades in a system to keep them below a certain risk value. As described above, this approach may change the percent of winners and other statistics about a system. This in turn can effect the results

of the system. Traders

should have a good idea of what kinds of risk to expect, before employing their systems. If the threshold for risk is very low, this money management technique/approach could effectively screen out most, or all of the trades. This is undesirable for several reasons. Firstly, it is assumed you have developed a reliable trading system otherwise you wouldn't be worried about money management. If this is the case, it is generally not a good idea to introduce any additional filters to a good system. The less curve fitting the better. On the other hand, a little filtering of the most volatile trades can help stabilize the equity growth of an account.

2.The second drawback of this money management technique/method is the fact it is not responsive to the size of the trading account. If the trading account doubles or halves in size, the amount of money to risk, which was determined at the beginning of trading, may not be appropriate or commensurate with the new account size. In these situations, it will be necessary to decide on a new amount of money to risk on each trade. But, if this is done, it may effect the percentage of winners and losers. Therefore, it will be necessary to re-characterize the trading system/money management combination to insure it is still acceptable and working properly. It is very possible to have a trading system that performs poorly for trades that have a risk of less than \$1000, performs well for trades that have a risk between \$1000 to \$2000 and again does poorly on trades with a risk above \$2000. In this case, if the system is were not doing well, it would do more harm than good to filter the trades for the reduced risk of \$1000. On the other hand, if the account is doing well, increasing the risk may not be beneficial either.

The following is a table showing the profit and drawdown for different values that are used for this system:

SYSTEM A System A, as previously mentioned, is a high probability system designed to limit the risk to \$500. (This system was actually developed using TradeStation . A trailing stop of \$500 dollars was used to insure the risk was not above \$500.) With this in mind, it is clear why the profit over drawdown numbers level out after more than \$500 is risked per trade, at a value of 3.32. An interesting fact about this system is that although the risk was locked at \$500, there were many trades that experienced a loss greater than \$500. The reason for this is that the particular market used for the development of this

system was not particularly liquid. As a result, there were several trades that were exited when the market gapped on the open and the trade was exited with a larger loss than expected. Steps can be taken to minimize these types of problems, but this will be addressed in a later section of this book.

It is also important to note that the drawdown to the account creeps up, as more money is risked.

SYSTEM B

This system made \$5,315 using no money management with a drawdown of 20%. Assuming traders risked \$750 per trade, applying this approach would allow them to increase the profitability of the system by about 50%, while only increasing the drawdown by 10%, overall. This is a substantial improvement.

System B illustrates what is typical of most systems, schizophrenia. If traders want the best profit to drawdown ratio (1.24 profit/drawdown), they should decided to risk \$750 per trading signal. On the other hand, if the traders want to achieve a higher profit (\$21,075), the most reasonable choice is to risk \$2,500 per trading signal, assuming they only want to keep the drawdown under a whopping 70%. (Alternatively, traders could risk \$1,500 per trade, since the percent of drawdown to the account is equally bad for the values achieved at both a \$2,500 and \$1,500 risk.)

SYSTEM C

System C is the trending system with a low percentage of winners. This system made \$6,847 when using no money management, on a drawdown of 20%. Assuming traders risked \$750 per trade, applying this approach will allow them to increase the profitability of the system by approximately 50%, while only increasing the drawdown by 20%. This is another substantial improvement.

This example is similar to System B in its schizophrenic nature. To achieve the best profit to drawdown ratio, traders should only risk \$750 per trade. However, to achieve the best profit, one needs to drop to the bottom of the table and risk \$4,500 per trade to make \$50,963.

Risking a Fixed Percentage of Equity on Each Opportunity Technique

The main disadvantage of the previously described techniques/approach, is that it will not allow traders to compound the winnings and/or decrease the risk in bad times. A way to compensate for this is to only risk a certain percentage of the account value for each opportunity. This technique allows traders to increase or reduce the risk as the account grows or shrinks.

With this technique/method, traders decide on a fixed percentage of the account to risk on each trading signal. For example, they may decide to risk exactly 10% on each opportunity. Once this is established, they would take that percentage of the current account value and only risk up to that amount on the trade. For example, if traders have a \$25,000 account, on the first trade they would risk only \$2,500 on this opportunity. On the next trading signal, the traders would recalculate the total equity for their account and then risk exactly 10% of the new account value, and so on.

Please note that traders will only risk up to, but not over this amount on any trading opportunity. (If a trade has a potential \$2,500 risk then they would only take a one unit/contract position. If a trade only has a \$1,250 dollar risk then they would take two units/contracts. If the trade has a potential \$2000 risk then the traders would only take a one unit/contract position. If the trade has a potential \$3,000 dollar risk then the trade would be skipped.)

This approach can do wonderful things for an account by compounding the profits of the account. Other methods often need to be reworked when the account size grows, but this method automatically readjusts with each trade. This can be a real administrative advantage to traders.

On the other hand, during down periods, it will slowly reduce the dollar value of the trades. This feature automatically protects traders from being wiped out after a long series of losses. The following table shows how an account would react after a given number of losses, using this method:

The following represents an example on how to use this table. Assume that traders using a specific system lose seven trades in a row. If the traders always risked 10% of their account, after seven losing trades in a row, they could expect to have 48% of the original account size. After fourteen losses in a row, these

traders would still have 23% of the original account size. This is a pretty good example of how this method can help save traders when they are experiencing a long string of losses.

But this is only half of the story. Although it takes seven losing trades to move the account down to 48% of its original size, it takes nine winning trades to get it back up to its original size. This is a well-known phenomena in many sales and marketing circles. Good sales and marketing executives are aware that if they cut prices on their products by 25%, then they must increase sales by 33%, just to get back to even again. This can create an uphill battle for some systems that will have to win more times than they lose, to recoup the money that was lost. On the other hand, this may not be an issue. If you are using a statistically winning system, sooner or later you should get back to where you were before the string of losses.

The following table shows how many trades it would take to lose 50% of the account and the number of trades necessary to build the account back up again to where it was, before the losses.

As you can see from the table, it will always take more wins than losses to get the account back to the original size, after losing a portion of the account.

Another disadvantage of this approach is that it can be hard for traders to calculate. This is especially true for day traders. It is often inconvenient for traders to figure out the results of the last trade, adjust the account value and figure out what the correct amount is for the next trade. Of course, if the traders are fairly automated, it may be possible to keep all this data in a spreadsheet and quickly and easily calculate it out.

Since this technique allows traders to risk up to, but not over the allotted percentage, this money management approach may have the effect of filtering out some high-risk trades. This may or may not be favorable to traders. However, for the most part, it should be considered an advantage for the same reasons discussed in the "Risking A Fixed Dollar Value for Each Opportunity" section.

An important result of the "risk up to, but not over" condition is that the growth to the account will not always be linear in regards to the percent of the account risked. In the following examples you will see that the growth of the account is linear in one example and non-linear in the other two. This highlights the

necessity for traders to look over the different scenarios to find the best fit.

SYSTEM A

System A is the system with the highest percentage of winners. This system made \$9,490 when using no money management on a drawdown of 8%. If traders are willing to accept a drawdown of 22%, they could almost double the profitability of the system from \$9,490 to \$17,145.

Once again we see that you can't have your cake and eat it too. If profitability is the traders' goal, they will need to risk 12% of the account on each signal. If this is the case, they could make \$60,470 using this approach but with a 63% draw-down. On the other hand, some traders may prefer to maximize their profit to drawdown ratio. If that is the case, the traders will need to risk only 4% of the account to make \$17,145, with a 22% maximum drawdown.

SYSTEM B - 53% Winning Average System

System B is the "normal" system, with about 50% winners. It made \$5,315 when using no money management, on a drawdown of 20%. Applying this technique of money management to this trading system did very little to improve it. The profitability of the trading system was doubled but the drawdown also increased substantially.

It is also interesting to point out that using this money management technique with this particular system, had a very distinct peak, with low values to either side. This kind of formation can suggest that there is some instability for this combination. Generally, traders should steer away from systems that act in a similar way, since the results may not be predictable.

SYSTEM C - 35% Winning Trend Following System

System C is the trending system with a low percentage of winners. This system made \$6,847 when using no money management, on a drawdown of 20%. As you can see from the table above, there was no combination that would be worth taking. It would be better to trade this system using no money management, rather trying this technique/approach.

In conclusion, different systems seem to respond differently to

this money management technique/approach. It is wise to do testing on your system before implementing this type of money management. For the right system it can increase the profitability of the system and protect the trader from losing periods. On the other hand, with the wrong system, it can be worse than no money management at all.

Adjust Trading on a Win or Loss Technique This type of trading goes by several different names: Pyramiding (up and down) and Martingale (normal and reverse). Basically it consist of varying the number of units/contracts taken, based upon the results of the last trade. For example, traders can choose to double up on a position after a losing trade in hopes of recouping losses or doubling up only after a winning trade to maximize the system's potential. This can be a very effective money management technique/strategy. However, it will only work correctly for some systems. Many traders try this approach in testing and get very successful results, only to have their systems fall apart in real time. In order to effectively employ this technique, it is necessary to know the Z-score of the trading system. (The Z-score is discussed later in this book, with specific applications to this form of money management.) Basically, the Z-score will tell traders if there is a dependence or relationship between winning and losing trades. For example, what is the statistical evidence that winning trades follow losing trades and vice a versa. Knowing the dependency between subsequent trades, (Z-score), gives traders the information on how to exploit their trading systems correctly. Without this information, traders are unable to accurately gauge the appropriate risk for the next trade, using this money management technique. It is very important to understand the Z-score and the Confidence limit of a system before applying this technique/approach. Please read the sections on Z-scores and Confidence limits, before using this approach.

This technique of money management can do wonders for a system that meets the Zscore requirements. The main strength of this technique is that it allows traders to maximize the risk reward ratio on high probability opportunities, while reducing the risk on low probability situations. The result is that a trading account can grow substantially faster, without increasing the over all risk to it.

There are two ways the trades in a system can be dependent on each other:

1. There are trading systems that tend to have wins and losses in runs. Under these circumstances, traders would want to implement strategies where after a winning trade; they would double up on the next trade and decrease the exposure after a loss.

2. On the other hand, there are trading systems that tend to flip flop between wins and losses and thus have fewer runs than one would expect. Under these circumstances, traders would want to double up after losing trades and cut back after wins.

Another advantage of this type of money management technique/approach is that it is relatively easy to implement in real time. Once traders are aware of the desired pyramiding technique to use, it is easy for them to know exactly how many positions to take on the next trade, based on the results of the last trade.

The major disadvantage of this money management technique/approach is that it is very sensitive to optimization, especially if the Z-score and Confidence limits are not high enough. Traders must be very careful not to over optimize the system/technique. Consider the following results:

Pyramiding Schemes Applied to System B

The table above shows wide variability of the results. With strict application of the Zscore and Confidence limits, traders can easily achieve very reliable results, plus large increases in profit and low drawdowns, using this money management technique/approach. See the section on Z-scores and Confidence limits for more details on how to use this money management technique. The table above shows some common pyramiding techniques, such as pyramiding up or down on wins or losses. Example A has no pyramiding and is shown just as the base number. Example B is pyramiding up on losses, while example C is pyramiding down on losses. The rest of the table goes over other different possibilities for pyramiding. Example H looks particularly interesting for this trading system. In example H, the applied technique has traders reducing their exposure after successive wins. Applying this method allows traders to triple the profit for their account, while reducing the drawdown. Other methods didn't work as well, but still allowed them to make additional profit.

As one can see, the particular scheme that traders take can have

significant effects on the profitability of their accounts. In fact, this technique has the ability to transform a losing system into a winning system. However, just as easily, it can change a winning system into a losing one. It is the wide variability in the results that makes this money management technique/approach very sensitive to optimization. Traders can easily select values that seem to make good profit only to find that their systems lose money in real time. The reason for the loss is that often the real time wins and losses come in a slightly different order. Since this new order (win/loss sequence) is different than the order in the historical results tested, the money management technique used is not well prepared for the future. This is the major reason why it is important to know the Z-score for any trading system used. The Z-score will give you the statistical basis to justify using this method and, as a result, the future performance of the system will be more consistent with the historical results.

A drawback to this approach is that traders will periodically have to re-evaluate the money management technique, as the account grows. The number of units/contracts taken on past trades would not be appropriate if the size of the account had doubled in size. For this reason traders will have to set profit goals and then re-evaluate the money management technique/approach once these goals are reached.

Crossing Equity Curves Technique

Using crossing equity curves for money management can be an excellent technique/method to trade an account. Often this technique can minimize the drawdown periods better than any other methodology. Additionally, when properly applied, this technique can actually improve the percentage of winning trades taken.

Many traders are familiar with using moving averages to decide when to enter the market. Almost every charting software package has this feature. Usually, traders will use two moving averages and enter the market when the short moving average crosses the larger moving average. Traders would enter a long position when the short average crosses from below to above the longer moving average, and vice a versa for a short position.

This form of money management technique/approach is similar to the trading technique of using moving averages. First, you decide on a long and short moving average. This is an average of

the profit of all the trades. The shorter average is an average of the profit (or loss) of the most recent trades. The longer average is an average of a larger block of the most recent trades. When the short average is greater than the long average, it means the trading system is doing better per trade than it has done in the immediate past. If the short average is less than the long average, it means the trading system is doing worse now than it did in the immediate past, on a per trade basis.

Consider the following example. Note how the shorter average is sometimes above or below the longer average:

Trade # Profit

1	\$ 500
2	\$1,200
3	(\$1,000)
4	(\$ -500)
5	(\$ -500)
6	\$ 500
7	\$ 500
8	(\$ -350)
9	(\$ -500)
10	\$ 25
11	(\$ -200)
12	\$ 200
13	\$ 560
14	\$2,135
15	\$ 750

When using this form of money management, traders would only enter a position in the market when the short average is above the long average. This is noted in the graph by the arrows. If traders got a trading signal and the short average was below the long average, they would skip that particular trade. However, for the purpose of calculations, all the trading signals and their results will need to be tracked. The averages are for all of the signals generated, not just the trades that were taken.

It is reasoned that this strategy will help keep traders out of long drawdown periods. Additionally, traders will only be trading the system when it is "in sync" with the markets. Numerous results show this to be true. Often, traders can achieve equal or greater profit, with less drawdown, on fewer trades. The fact that a higher profit is achieved on fewer trades is an especially attractive bonus. Fewer trades result in fewer fixed costs and less exposure to the market.

The basic assumption is that there are "phases" when a trading system does better or worse. This is true in many cases. However in other cases, what traders perceive as phases, are simply statistical consequences of the percentage of wins or losses of a system. As mentioned repeatedly though out this book, a 50% system has a very high chance of getting several wins or losses in a row. These runs may be perceived by traders as being "phases", when in actuality they are not. They are just the statistical consequences of a particular system.

In order for this type of money management technique to work effectively, it is necessary that there really are "phases" in the trading system. (Otherwise its just luck, that will probably run out.) Lets clarify the term "phases" to mean that wins and losses are grouped more together than would be expected, according to a normal statistical distribution. For example, the wins and losses tend to come in runs. The best tool for determining if a trading system has phases is to consult the Z-score and Confidence limits for that system. (Z-scores and Confidence limits are dealt with extensively in following sections of this book. These sections will also deal with specific applications for this from of money management.)

Although this money management technique has several substantial advantages over other methods, there are also disadvantages to this approach:

- This technique/approach can be hard to implement in real time. This can be especially tiresome for day traders. This is not an insurmountable problem, if the traders have a fairly automated approach to trading.
- Since it is necessary to track all the trading signals given, whether or not a position was taken in the market, traders may find themselves spending a fair amount of time tracking trades that provide no real equity for the them.
- Many trades are necessary for both historical testing and real-time trading. Since a fair number of the trading signals will be filtered out, traders will need additional trades in order to trade as frequently. The real-time aspect may not be necessary for some traders since they may be making more money with fewer trades. However, from a testing perspective, more trades are necessary since some of the sample set will not be taken. It is only the trades that are taken that a money manager can base the statistical reliability of their trading system/money management approach on.

One last concern about this technique/approach is that this method of money management can be sensitive to optimization, especially if the system does not have a high enough Z-score. Traders may find that a 3 short and 6 long moving average combination works wonders for their account. On the other hand a 4 short and 7 long combination loses money. To get an understanding of how sensitive to optimization a system can be, consider the following combinations tried on System C, the low probability trending system:

The table above shows the wide variability of the results. With strict application of the Z-score and Confidence limits, traders can easily achieve very reliable and favorable results, large increases in profit and low drawdowns using this money management technique/approach. Please see the sections on Z-scores and Confidence limits for more details on how to use this money management technique.

The table above shows how subtle changes in the two moving averages can dramatically effect the profitability of a system. System C, when traded with no money management made \$6,847 on a 20% drawdown. If you consider examples D and E, you can see how changing from a 5 period to a 6 period moving average made the profitability of the trading system range from almost double the profit, down to almost half of the profit, of the trading system with no money management. Examples A, B and C also illustrate the dangers of optimizing this approach. As the subtext under the graph states, if the Z-score is high enough, the danger of optimizing is negligible, since you then have mathematical justification for applying this technique/approach.

On the other hand, example D shows how valuable this method can be when employed correctly. Under these circumstances, traders can almost double the profit from a system while reducing the drawdown in half. Frequently you will find that this method of money management can increase the profit and reduce the drawdown at the same time. In the section on Z-scores, you will see how when it is properly applied to this technique/approach it quadruples the profit of the trading system. Because of it's enormous utility, this money management technique should definitely be considered by all serious traders.

Optimal f Technique

For any particular system, it is possible to find the optimal

amount to risk on each trading opportunity. Trading with this optimal amount of capital will result in the greatest gain to the account. If traders risk either a higher or lower dollar amount, they will make less money. (This is because a greater risk does not necessarily result in more gain. This is a good example of a non-linear force in money management.) For this reason, it is important to know what the Optimal f is for your system. If traders do not trade at the Optimal f value, they are essentially curbing the potential return on their trading system. However, some traders may have a desire and/or reason to do this, others may not. The Optimal f was popularized by Ralph Vince in his book "Portfolio Management Formulas" (Wiley 1989). Although, it was originally developed by a Mr. Kelly to solve problems in the Communications Industry.

(This section deals with the money management aspects of applying the Optimal f technique. In the section of this book on "How to Compare Money Management Approaches", there is another discussion about the Optimal f. That section will go into detail on the mechanics of what the Optimal f is, how the Optimal f is calculated and what it will tell traders when comparing systems.)

The Optimal f is not hard to work with. Some of the math can be confusing and the application of it is a bit obtuse, but the kNOW Software will do most of the work for you. When one usually sees a graph for the Optimal f, it looks like the following:

System B - Optimal f Graph

The Optimal f is a value that is between 0 and 1. The kNOW Software displays it as a percentage. This graph shows an optimal value of about 30% or 0.30. When the account is traded at this level, the account will grow most quickly.

Different points along the graph represent different amounts of profit or loss. At the peak of the graph, traders will make the most money. If traders move equally to either side of the peak, they will make roughly the same amount of money on either side. To illustrate this point, consider the following table for different values of f.

System B Traded With Different Values For f

As you can see from the table, 30% is the optimal value. (Actually it is more like 31%, but the example still shows the point.)

Likewise, traders can see how risking more or less than this optimal value results in a lower return on the account. However, it is important to note that any time traders are risking more than the optimal value, they are getting less return on their money with a greater risk to their account. This can be seen from the growing drawdown number as you proceed down the table. It is because of this drawdown value that traders may not want to trade their accounts at the optimal level. If you remember, System B made \$5,315 with an 18% drawdown. It is true that if traders are trading at the optimal level, they can double their profit, however the drawdown is 53%! This is a very high drawdown and may be unacceptable for most traders. To combat this problem, traders may want to limit the drawdown of an account to underless than 30%. In this case, if traders were going to use the Optimal f technique, they would have to use 15% for the f value. In this scenario, traders are limiting the profit in order to bring the drawdown into a more reasonable number. Please keep in mind this is only an example. Some trading systems may respond much better to the Optimal f technique while others will respond worse.

If you reference the table again, you will see that it also shows another anomaly that can appear in this type of money management technique/trading. In a statistically perfect world, since we know that 31% is the optimal value, we would expect the values closest to 31% to have more profit than values that are farther away from 31%. In the real world, this is not always the case. If you look closely at the profit, when traders risk either 20% or 25%, you find that 20% made more money than the 25% value. This is caused by the fact that often, for a given value of f, this method of money management can suggest taking something like 3.2456 contracts. Since this is not feasible, it is necessary to round down. The reason we round down rather than up, is because, if we round up, then we are trading at a value for f that is greater than what was selected. And, when we trade with greater values of f we increase the risk, but not necessarily the return. Since the reality of trading forces us to round down, there are cases when the effects of the rounding are not equal. As a result of this situation, it is not uncommon to find that 31% is the optimal value for f, but using 30% the trading system actually makes more money historically. Moving into the future, it would be best to use 31% for actual trading, because the more trades there are in a sample, the more likely the highest profit value will converge with the optimal value for f.

Summary of Money Management Techniques

As previously outlined, usually there is more than one way to improve a trading system with money management techniques. It is important to note that often it is initially very hard to tell which money management technique will work the best, with any specific type of trading system. There are only a few clues to tell traders what works the best, such as the Z-score and related methods. However, even these methods need to be thoroughly tested by traders. The only way traders can possibly know what works best for their trading system and their personal goals/needs is to test out the system with all of the different money management techniques and scenarios.

Any one of the techniques can dramatically improve the profitability and reduce the drawdown for the right trading system. For the wrong trading system, it can have the opposite effect. At the time of this writing, little research has been done to correlate the different types of trading systems with particular money management techniques/approaches. The authors are planning on doing more research into this subject area but in the meantime it is up to the users of the kNOW Program to thoroughly test their own trading systems to determine what works best. This is a good example of how much more knowledge is needed to be acquired about using our money wisely and the arcane subject of money management.

Using Optimizations

This section will be brief, since most experienced traders either know or ignore the facts about optimization.

For most of the different money management techniques discussed, it is possible to find the optimal values. For example, $X\%$ is the perfect percentage of the account to risk on each trading opportunity or X and Y are the perfect values for using a crossing equity curve approach to money management. Knowing these different values is important to traders. However, far too many traders expect their systems to perform the same in the future as they do in the "optimal" past. This just isn't the case.

Optimal values are important because they give traders an idea of about where they need to be, but they are poor indicators of the future. The best way to determine the success of a particular technique/approach is to try it out on several different data sets. When traders are looking to pick the best value for a particular money management technique, it is best to look at all the values

around the optimal value and select the one that is most in the middle, of the good values. Consider the following table:

Value Profit

1 \$ 100

2 \$ 150

3 \$ 200

4 \$ 300

5 \$ 500

6 \$1,700

7 \$1,200

8 \$1,500

9 \$1,300

10 \$2,000

11 \$ 400

12 \$ 600

In the table above, it is clear that the optimal value is 10 (\$2000). However, if one considers the other good values in this area, values 6 through 9 are also worthwhile. Under these circumstances, traders will have more reliable results if they use 8 as the value in real-time trading. It is not the optimal value, but it will offer the most security in terms of the variability of the results.

This method of selecting an optimal value should not be used in lieu of doing testing on additional data sets, but it can direct traders to the most secure value to use. (The only exception to this is probably the Optimal f value. Please consult that section of this book in order to determine how to pick the optimal value for f.)

Before Comparing Management Approaches, Know What You Want

Many of us have heard the joke, "You want to lose 10 pounds of ugly fat? Cut your head off." In a strange way, this kind of thought process applies to money management. There is an aspect to money management that is not something you can think about, it is something that you feel about. This section has a lot to say about values, but nothing about numbers, trades or statistics. Additionally, we will only discuss profits in terms of happiness and peace of mind.

Before a person can really dive into selecting the correct money

management approach, there are a couple of steps that need to be completed.

- Establish your investment goals and limits.
- Develop realistic expectations for your trading system and money management combination.
- Reconcile the two.

The vast majority of this book and software deal with steps two and three. This is the only chapter that deals with step one. It seems reasonable to expect most traders to read through this chapter academically and never take the ten minutes that are necessary to evaluate what they really want in a system. The exercises below are designed to move this chapter from an academic curiosity into reality. Far too many traders use money management methods they are barely familiar with. Far fewer traders use money management methods they are comfortable with. Fewer still are the people who are happy about the money management choices they have made. This is because most traders very seldom or never, make choices about money management or what they want. Knowing your own personal limits is the first step in picking what is right for you. It is also the most powerful tool for doing what is right for both you and your trading account.

Let's take a little different approach to explaining why it is important to identify your limits in advance. Have you ever seen a friend lose all their money trading, all of it, including their house? It has to be one of the most sobering and scary things to watch. The main reason people fall into these traps is because they have not set up the boundaries necessary to effectively manage their money. (Of course, there are other reasons also.) The reason traders puts in stop loss orders is to protect the capital in their accounts. Why not have the same mechanisms for the total account. For example, "If I lose \$XXX, then I quit."

On the positive side, "When I make "\$XXX, then I will take \$XXX out of the account to buy a new sports car." The horror story above was meant to scare casual traders, but fear of the negative repercussions is only one reason to go through this exercise. On the other hand, there are many very positive reasons to make these kinds of decisions in advance. Making these kinds of decisions in advance can relieve the anxiety for traders. Additionally, these kinds of goals can keep traders focused on the markets and their accounts in a positive way.

As final thoughts, keep in mind two things:

You will probably never find a perfect system. (A system that is more reliable than the US post office, makes a fantastic profit and is easy to trade.) You probably will find a good system, or at least, an OK system. Many very successful money managers are successful because they know how to effectively use a couple of OK systems. In short, try to have realistic expectations.

The best traders in the world are the ones having the most fun. The best money management technique/system is the one that gives traders the greatest peace of mind. It is important to make money, but you are only on this planet once.

Please give some thought to the following questions and please take the time to enter your responses. This is a simple but very important exercise.

What is your profit goal for your trading account?

How quickly do you want to achieve this goal?

How much are you comfortable losing on one trade?

How much of your trading account are you comfortable losing, before you stop?

Do you ever intend to be a professional money manager?

If so, what professional risk/reward goals do you have?

It would be wise to revisit this chapter after you have had an opportunity to look at the effects of the different money management techniques/methods on your trading account.

With clear and stated goals, you are ready to Compare Money Management Approaches.

How to Compare Money Management Approaches

The previous sections have spoken about different kinds of money management techniques and approaches and how they can effect the results of a trading account. This section discusses some of the ways for analyzing these results, with the aim of giving traders the methods to select the best approach. It also discusses some of the hazards of using a particular type of analysis, so traders may avoid common mistakes when deciding on a particular system.

In addition to helping traders pick the best money management technique(s), these methods work equally well in helping traders decided on which trading system to use. These methods include comparing results on the basis of:

- 1.The total profit
- 2.The drawdown
- 3.The profit / margin ratio
- 4.The profit / drawdown ratio
- 5.The profit / time ratio
- 6.The percentage of winners
- 7.Z-score and Confidence limits
- 8.The Optimal f
- 9.The probability of ruin

Each of these methods can give the user a little different

perspective on the results of a trading system and/or money management technique. On the flip side, each of these methods also has limitations. In all likelihood, traders will find it necessary to use several of these methods to find the technique that works best.

It is probably important at this stage to define the word "best." The problem is that "best" has two definitions:

1. It is the highest reward to risk ratio. The optimal asset allocation where capital grows the fastest with the smallest amount of risk.
2. It is the method that maximizes profit within levels of risk that are acceptable to traders.

These two definitions are not always compatible with each other. The optimal risk/reward ratio may have too much risk involved for small traders/investors. For example, traders may find by doing the Optimal f analysis, they should risk 25% of their account for the fastest equity growth. However, this may put them in a position where the probability of ruin is high enough to warrant concern. In cases like this, traders would have to choose a non-optimal value that corresponds to an acceptable amount of risk.

With this in mind, definition number two becomes our working definition. It is the second definition of how the word "best" is used through out this section.

Comparing Results on the Basis of Total Profit:

Total profit is often the most intuitive way to compare results. If you were offered either a ten-dollar bill or a twenty-dollar bill, you would probably pick the twenty. The same applies to systems. Knowing that trading system X made \$10,000 profit and trading system Y made \$20,000, most traders would choose system Y.

Profit data is the easiest data to get on a system. It is important to remember to add commissions and slippage to your calculations. Many novice system developers will omit or underestimate commissions and slippage. For example, if a system trades 100 times and earns a \$5,000 profit, if commission and slippage (\$75 per trade) are added to the equation, the system actually loses \$2,500. It is also important to note that while commissions may be similar for different commodities, the chance of getting a bad fill is not. Traders should account for

larger slippage in markets that have a low volume or are fast moving markets. This is particularly true for traders that do spreads. They can get caught in the low volume period of the forward contract when entering and the low volume period of the near contract while exiting. The slippage values should also include some "insurance" for the possibility of being caught in a gapping or limit move.

Only when all of these costs are calculated into the equation should traders begin to consider evaluating the profitability of a system.

Evaluating trading systems on the basis of total profit can be valuable, but since most high return systems include a large amount of risk, it can expose the traders' accounts to unacceptable losses. For some traders a 50% drawdown may be OK, for others it's not. Large drawdowns can effect ones account, mental health and track record. It is possible to have a highly profitable system without large drawdowns. But as a general rule, systems achieve greater profit at the expense of greater risk.

Also, comparing results on the basis of total profit doesn't tell traders many things. For example, traders would have no idea how the margin was allocated, how efficient the system was in terms of time in the market, etc. These kinds of factors can play heavily into the viability of a trading system. So, in this respect, evaluating a trading system on the basis of profit is taking a very narrow perspective on that system.

It is impossible not to be concerned or look at the profitability of various systems. After all, that's why people trade, to make a profit. On the other hand, many traders should do more to down play this method of analysis, since there are many important things it does not tell them about their systems. Analysis on the basis of profit is a valuable tool only when it is combined with other methods and should not be trusted as the sole form of analysis.

Comparing Techniques for the Smallest Drawdown (Smoothest Equity Curve)

As most traders know, the markets are run by Murphy... As Murphy would have it, almost every system runs into its drawdown period shortly after its inception. For traders that have little experience with drawdowns, comparing trading systems on the basis of the smallest drawdown might be the

superior method for selecting a system that works best with the their personality. (Often margin is added to this figure because it represents the total capital necessary to trade a system. However, adding margin into the total equation does not reflect the actual amount the traders might lose.)

The drawdown period for a system is the largest drop in account equity from a peak in the account to a valley. The drawdown period can span across winning periods, to connect large losing periods, to form a large account decline. There are two forms of drawdowns. Neither one is the "correct" form, but traders will find they are usually pulled to one or the other.

1.Largest drop in equity, in terms or percent. 2.Largest drop in equity, in terms of dollars.

The following graph shows an example of how these different kinds of drawdowns can appear at different times, in a trading system's life:

These two types of drawdowns appeal to different types of traders. What primarily separates these two types of traders are their professional goals. Traders interested in becoming fund managers, or other types of trading professionals, would be wise to limit their drawdowns to around 20%. Most successful professional traders have less than a 30% drawdown. Funds that have large drawdowns tend to scare off investors. For institutional clients of a fund, consistency of results can often supersede the return of an account in importance. Additionally, it's bad press. The drawdown is frequently calculated when magazines are comparing different fund managers.

For traders who do not intend to be money managers, the maximum dollar value of the drawdown becomes more a thing of personal taste. What are you willing to bear? (No pun intended.) Some investors are willing to risk a large percentage of their expendable capital on trading, while others are only trying to get a good return on their capital. In either case, it's a personal decision.

Systems analysis on the basis of the smallest drawdown can be very important to traders for another reason, mental peace. It is easier to stick to a system that does not have large losing periods. Many traders fail because they do not stick to a welltested system. Having a system with small drawdown periods can make it easier to stay with the system during the hard times.

The only real disadvantage for evaluating trading systems on the basis of drawdowns, is profit. Often limiting drawdowns means limiting the risk. Limited risk usually translates into limited profit. Contrary to popular belief, it is OK to limit the profitability of a system. Often, professional traders limit the risk to their accounts and forgo potential profits at the expense of assured consistency. There sometimes seems to be this testosterone/ego thing about having the most profitable system. The same thing applies to people who like to dive off high places into water. It is good for getting an adrenaline rush or a "Wow" from the audience, but wouldn't you rather let someone else do it, while retiring to your hot tub? To pull together this analogy, it is often more comfortable to grow an account slowly and safely than to take the large risks needed to achieve maximum account growth.

Comparing the Profit/Margin Ratio

Using a profit/margin model to evaluate systems is often the technique used by advertisers of trading systems, when stating profit results. This usually is not the best or the most accurate way to represent systems. Since, as stated above, many of the high yield trading systems have large drawdown periods, thus making the entire system unacceptable to most traders. The same system, being analyzed by this method might seem impossible to pass up, since a margin/profit ratio usually looks pretty good. Who wants to turn down a system returning 300%? Often commercial trading systems of this type are targeted for a particular commodity; hence, the results can be skewed by the margin requirements for that particular commodity. A trading system making the same profit in the S&P 500 as in Soybeans, would look better in Soybeans due to the lower margin requirements. This combination of facts can frequently make the profit/margin ratio a misleading number.

Despite what was said above, comparing systems on the basis of the profit/margin ratio does have some utility to traders. It can help them to know if the capital in their account is being leveraged correctly. Simply put, the margin required to enter a particular trade is capital that cannot be used to enter new opportunities. This money could be used as margin in other systems or as risk capital for new entry signals. Analyzing different systems on the basis of the profit/margin ratio allows traders to maximize the utility of the capital in their accounts. Given that a trading system will earn the same amount in two

different commodities, it is reasonable to trade the commodity with the smallest margin requirement. This approach will allow traders to enter more trades and/or for each trade put on more units/contracts than they might have been able to do trading the instrument with the larger margin requirements.

Of course, developing strategies that limit the commitments to margin, may not be suitable for all traders. For professional money managers, margin is usually of little concern, since only a fraction of the account is being risked at any one time. In cases like this, it is not necessary for the money managers to maximize the utility of their margin capital. In fact, doing so may work against the traders' overall risk/reward goals by enticing them to take more trades than would be feasible to meet certain risk criteria.

On the other hand, for small and aggressive traders, leveraging margin requirements may allow them to get the best bang for their buck. To give an example, for small traders it may be possible to take only one contract in the S&P due to the large margin requirements (\$12,000 + or -), with a potential reward of \$3,500 for the trade. If these traders considered other markets, for example the Canadian dollar (\$400 + or - required margin), they may be able to enter thirty times as many contracts. Each contract may have the potential to make only \$250, but when you add them all up, you would still make more money than trading just one S&P contract.

Overall, this method of analysis may have some utility to traders, but it is important to remember the things it's not telling you. It says relatively little about the risk to the account and does not even give a clear picture on the profit of the account, since margin requirements are very diverse. It can give a picture of how effectively the margin is being used by traders, but not even this applies to all the traders' needs.

Comparing the Profit /Drawdown Ratio:

Evaluating a trading system based on the profit/drawdown ratio is perhaps the most useful way to compare two systems. It gives traders a solid base to compare different systems by standardizing the risk reward aspects of different trading systems/money management techniques. This standard is easily compared across both trading systems and commodities. Additionally, this method gives traders a simple view of what

kinds of risk to expect with certain profit objectives. In this sense, traders can find a system that has a suitable profit/drawdown ratio and begin to customize the results of the system to their needs.

Consider the following example:

This method allows traders to see that systems A, B and C all have a profit to draw down ratio of 2. This is evident even though the profit, drawdown and the risk per trade are different for each system. In this sense, traders can say these systems are similar, in respect to risk/reward expectations. Additionally, this method has the advantage of standardizing all three systems across two of the most important features to look for in a system, profit and drawdown.

This approach is a very powerful method for comparing trading systems to each other while still allowing traders additional tools for optimizing a particular system. If traders also have the appropriate data on the drawdowns, it may be possible for them to scale their systems up or down to meet the risk goals for their accounts. This can be achieved while maintaining the same relationship between profits and drawdowns.

Consider system B above, this system made \$1,000 on an average risk of \$50 per trade. Knowing this, traders may be able to take four times as many positions in the market for every trading signal. In essence, doing this quadruples the traders' profits and drawdowns. Since this system had such a low drawdown to start with, a draw down that is four times as large, is still reasonable. On the flip side, traders are often able to reduce a system using the same process. Traders could take half as many positions, and still maintain the same profit to drawdown ratio. Using these kinds of processes allows traders to scale their systems up or down in order to better accommodate their risk/reward objectives.

However, there are also some disadvantages to using this type of analysis on trading systems and money management techniques/approaches. The most important of these is that it does not give traders any insight into drawdowns, in relationship to the account size. This is evident from the examples above. Systems A and C have large draw downs in respect to their account size. It is possible traders would enter into a draw down period (\$5,000) when they are just beginning to trade their \$10,000 account. This would be devastating to many traders.

When comparing trading systems on the basis of profit to drawdown it is best to compare systems that have been traded in approximately the same time frame. If a good system typically experiences \$10,000 of drawdowns per year and \$20,000 in profits per year, this system has a profit to drawdown ratio of two. However, if you had two years of data, you may find that the system made \$40,000 in profit, but still had a drawdown of \$10,000. This would give you a profit to drawdown ratio of four. Three years of data may give a profit to drawdown ratio of six. Since the drawdown often does not grow substantially in magnitude over the years, additional years of data frequently improves the ratio value.

Analyzing a trading system on the basis of profit to drawdown can be a valuable tool for comparing systems that have very different results. It also gives traders a convenient way to examine how to scale a system to their particular needs. However, this method can also leave traders in the dark when considering the drawdown to the account, since the account size is not calculated into the formula.

Comparing the Profit/Time Ratio

Although time analysis is not common to most traders, it can be an important statistic to look at. There are two main advantages for evaluating a system on the basis of time:

- 1.It allows traders to find systems that have less "global" risk, by finding systems that are exposed to the natural variability of the market less than other systems.
- 2.It allows traders to find systems that will use the capital in their accounts in a more efficient manner.

When looking at the big picture, it is reasonable to say that given two equally profitable trades, the one that is in the market longer is usually exposed to additional risk. An example of this type of risk, is the possibility of losing money due to an unexpected market phenomena such as, a gap opening of the price, a surprise weather pattern that effects the commodity or odd economic reports. Any one of these market phenomenas (and they happen more often than one expects) can quickly change a winning position into a losing position. In this sense, system traders will want to minimize the amount of time their system is in the market.

The risk of being exposed to the market is very hard to quantify, but it does exist as a real concern. In this respect, minimizing this form of risk, is a part of an effective money management approach.

In addition to this, time analysis can help let traders know if they are using their funds in an efficient manner. This may not apply to all traders, but most professional traders, who have a large amount of capital under management, can benefit from knowing how their money is being used.

The argument here is similar to the profit /margin method of evaluating a trading system. With this approach it is important to note what is the average time it takes for a trade to move into a position where it locks in the fixed costs or exits the market at a loss. A certain amount of capital is required to support a position until it has moved in the traders' favour, and they can lock in enough profit to cover the fixed costs (margin, risk capital, commissions, slippage and, if necessary, insurance from limit moves against the position). This "support capital" is money that cannot, or should not, be put into other opportunities, until traders have locked in a profit on their positions.

To illustrate, consider the following:

It should be fairly obvious that given the choice between these two systems, traders should use system B, since it is in the market half the time of system A. Assuming there are the same number of trades in both of these systems, system B has half the market exposure that system A does. If system B is in the market half as much as system A, it may be possible for traders to expand the number of commodities that are monitored by the system and enter twice as many trades with system B than with A, and with the same account size. This approach allows traders to expand the number of positions taken, without increasing the amount of capital that is dedicated to margin. Of course, this depends on the system. It may or may not be possible to take more signals, due to other limitations on the traders. At least in the theoretical sense, applying this kind of analysis can increase the percentage of risk capital traders have in an account. In real time this may or may not have an actual application for the traders.

Application of this kind of time analysis to increase the account's efficiency, will be most useful with systems that are expandable.

By definition, expandable means a system that can be expanded in order for traders to get additional trading signals. A good example might be systems that span over multiple commodities. This type of system may allow traders to introduce additional trading signals to the system by using the system on additional commodities. In other cases, this type of analysis may not be appropriate. For example, consider traders who have specialized day trading systems for the S&P 500. These types of traders do not have a method for getting additional valid signals, since their system is customized specifically for the S&P 500. Additionally, with a day trading system, the traders may not have enough time in a day to execute additional trading signals.

Analyzing a system for the profit/time ratio can be a valuable method if the traders have either limited capital and/or the ability to increase the type of commodities they are trading. This method, like the profit/margin method, will show traders, which of two similar systems will maximize the utility of the money in their trading accounts.

This method of evaluation is especially useful if traders have a limited account size and cannot take all the signals generated by a system that monitors many commodities.

However, there are a couple things to watch out for if you use this kind of analysis:

1.This kind of analysis is not always relevant. If the difference between the average time in a trade for two systems is less than twenty percent, it is probably not necessary to worry about. (Twenty percent is a rule of thumb, and can be effected by the size of the account and the type of trading system.)

2.In terms of optimizing the margin efficiency, make sure it is relevant to your system. As mentioned above, if you do not have a method for increasing the number of signals, there is no way to increase the margin efficiency for your system.

One last thought, the profit over time ratio is not a static number. It can, and does, change from month to month. If traders see a change in the profit over time ratio, it can often be an early signal that the market is changing. For example, it is reasonable to see a change in the profit over time ratio when the market is changing from a trending to a choppy market.

How Important is the System's Percent Win Ratio?

In the trading systems the authors have found and used, the reliability of the winning percentage of the system was not a major factor in selecting it over other systems. There are trading systems that win 65% of the time and have the same profit and draw down as trading systems that win only 35% of the time. To some extent, given that most of the other parameters can remain the same, choosing a high reliability versus a low reliability can be a function of taste. Some people prefer trading systems that win frequently, others prefer to go for the big win. Ironically, there are many traders who have good systems that take a reliable profit by exiting the market early in a trend. These are also the same traders who often kick themselves for the rest of the trend, due exiting too early, even though they have a good system.

Many traders tend to focus on the percentage of winners. There seems to be an assumption that systems that win more often make more money. In some instances this is true. However, in many instances it is not. It is definitely not a conclusion to assume without thorough analysis of the system. It is the authors' experience, that most of the trading systems that traders will find, will only win approximately 50% of the time. Additionally, many money managers have systems that win more like 35% of the time. (Part of the reason for this is because most money managers select trending systems.)

What is strange is that most traders/investors know that professionals use lower probability systems, but their eyes bug out and their mouths start salivating when they hear about an 85% winning system. The simple fact is, the profitability of a system is not directly related to how often it wins.

While reliability is not a major factor in the viability of a trading system, it can have some major effects on the results of the system. Often times, the percentage of winning trades tells traders much more about the potential for loss than gain. In this respect, looking at the downside potential for a system is important. Let's look at a trading system that has a 50% winning percentage. The following table reflects the possible outcomes after ten trades:

Looking at this table, it is clear that traders with 50% winning systems have a 17.2% chance of getting seven losses or worse in a sample of ten trades. (This is calculated by adding the bold figures together.) This level of confidence may not be acceptable

to all traders, especially in situations where they have limited capital. Another way of explaining this phenomenon is that after ten trades, there is a 17.2% chance that a 50% winning system will appear as a 30% winning system. (In fact, there is a 75.4% chance a 50% winning system will appear to be anything but a 50% system after ten trades.) In this sense, it can become very hard to trust the value for the percentage of winners in any trading system.

Another issue with the percentage winning value of a system is that it can effect the worst run of a system. From a statistical point of view, the reliability of a system influences the maximum number of consecutive losers a system can be expected to have. The maximum number of consecutive losses can become relevant to traders because it is often associated with the drawdown period of a system. To give the reader a sense about what kind of losses to expect in a row, consider the following table. It contrasts the winning percentage of a system and in turn the probability of getting a run of losing trades in a row:

To use an example from this table, if traders have a 50% system, for any run of three trades, they will have a 12.5% (bold) chance of getting three losses in a row. This table illustrates how the percentage of winning trades can effect the drawdown period for a system.

All things considered, this table is probably more valuable to traders mentally than to their accounts. It is valuable for traders to have realistic expectations of the worst run in a system. It is often during these periods that traders feel their system has

"broken down." Unfortunately, it is during this "broken down" period that many traders give up on good systems.

Therefore, is the percentage of winners an important statistic to look at? On one hand, it can help traders have reasonable expectations about the performance of a system. On the other hand, the profitability of a system is only partially linked to the reliability of winning trades. So, the truth lies some where in the middle.

Z-Scores and Confidence Limits

Looking at the percentage of winners and losers only tells part of the story when it comes to trading. This kind of analysis assumes

that all the trades in a sample happened independently of each other. A good example of this kind of independent relationship between examples (trades) would be a coin toss. If you flip a coin, there is a 50% chance you will get heads, regardless of the result of the last coin toss. For independent situations, past events do not effect the probability of current events.

The markets, however, can have a dependency between trades, where the outcomes of the trades effect each other. For example, the fact that a system has lost on a long trade can effect the chances of winning in the future. A good analogy of this kind of situation is most card games. Once a card is played, and it isn't returned to the deck, it will effect the probability of the other cards to be played. However, the next card to be played is still a random occurrence. In this sense the way a deck is played is both random and dependent on past events. This type of situation can apply to trading, where past events effect the future.

Traders may find systems where the wins or losses come in streaks. Conversely, traders may also find that after a win they usually receive losses, or vice a versa. It is also possible to find dependency in the profitability of the trades. For example, traders may find that highly profitable trades are followed by low profit trades, or they may find the profitability going in streaks.

The Z-score is a statistical value that helps traders analyze the dependence between trades. The Z-score is calculated by comparing the number of runs there are in a set of trades, with the number of runs that would be expected statistically. This number is then usually transformed into another value called the Confidence limit. The Confidence limit is expressed in terms of a percentage, such as "90%." However, when the value is expressed this way, it can be a bit confusing to laymen of statistics. We are usually conditioned to consider a 90% value as pretty reliable, but this is not the case when examining the Confidence limit. The reason for the confusion is that unless a system has a Confidence limit of 94% or better, it is probably not a very reliable conclusion. It is possible for traders to make some valid conclusions about a trading system if the Confidence limit is 90-94%. However, usually in this range, it is more likely the traders are only viewing a statistical anomaly, and the system does not have any exploitable dependence.

In order to calculate the Z-score and the Confidence limits, it is necessary for traders to have at least thirty trades in the sample.

This is due to the calculations relying on the standard deviation of the system. (The Confidence limit is actually the amount of examples one would statistically expect within X standard deviations. For example, one standard deviation represents the area where 68% of all the events will fall. If the Z-score was one then the confidence limit would be 68%.)

The Confidence level is only a positive number. However, the Z-score can be either positive or negative. Each has a slightly different meaning to traders.

1.A negative Z-score means there are fewer streaks in the sample of trades tested than would be expected statistically. This means winning trades tend to follow winning trades and losing trades tend to follow losers.

2.A positive Z-score means there are more streaks in the trading system than would be expected. This means winning trades tend to follow losing trades and vice versa.

If traders find a system with a reasonable Confidence level, it is possible to begin to exploit this aspect of the system. The rest of this section will focus on two examples to demonstrate the possible application of this type of analysis.

1.The first example trading system has a positive Z-Score. 2.The second example trading system has a negative Z-Score.

Keep in mind these are select examples. These types of calculations can be used with and/or applied to other techniques of money management equally as well. The point of these examples is NOT to show which is the best method, but to stimulate thinking on this subject.

Example 1 - Positive Z-Score

These are the basic results of a system before any money management method is applied. Basically it made \$8,455 on a drawdown of 8%.

System Information:

Total Profit : \$ 8455.00

Gross Profit : \$ 18765.00

Gross Loss : \$(-10310.00)

Worst Drawdown on a Percentage Basis Drawdown as a Percent : -08%

Drawdown From : \$ 36025.00

Drawdown Dollar Value : \$(-2860.00) Drawdown To : \$ 33165.00

Number of Trades : 45

Number of Wins : 24

Percent Wins : 53%

Number of Losses : 21

Interdependence of trade results Z score : 2.15

Confidence Limit : 96%

As you can see from the values given, this trading system has a positive Z-score of 2.15. This translates into a confidence limit of 96%. Having a positive Z-score means in this system, wins tend to be followed by losses and via versa. Based on this information, it would seem reasonable to try a Martingale or pyramid money management approach to the system. For example, after traders experience a loss, they will take additional units/contracts on the next signal as a way of recouping losses and/or increasing the system's overall profitability. The following table shows a few methods associated with using this approach to money management:

As this table illustrates, application of the Z-Score can have a dramatic effect on a trading the system. If you would please look at example A, you will see the normal results from this system. If traders had used a Martingale method like in example B, the designated trades would have reduced the drawdown to the account by more than 50% and doubled the profit. Additionally, if traders had used a method like in example C, they would have quadrupled the profit of the system, while only increasing the overall drawdown to the account by 1%. This has moved a fairly average system into a very positive system.

At this point it is often easy to get trade dependence and independence mixed up and say something like, "If I'm doubling up on losing trades and I lose four trades in a row, that would be a loss of fifteen units/contracts! What are the chances of getting four losers in a row?"

Naturally we would grab our calculators and find that for a 53% system, the odds of getting four losing trades in a row is approximately 11%. But this is not true. The chances of getting four losers in a row is less than 11% because we know there is a dependency between the trades and that winners follow losers and losers follow winners.

In summary, a positive Z- score can easily be exploited by using a pyramiding method to correct for losers and winners. Aggressive traders, who have a positive Z-Score for their systems, can turn this fact into cash if they apply proper money management intelligently.

Example 2 - Negative Z-Score

The following results are for a different system with no money management applied to it:

System Information:

Total Profit : \$ 3045.00

Gross Profit : \$ 17505.00

Gross Loss : \$ (-14460.00)

**Worst Drawdown on a Percentage Basis Drawdown as Percent:
-22%**

Drawdown From: \$ 28210.00

Drawdown Dollar Value: \$(-6300.00) Drawdown To : \$ 21910.00

Number of Trades : 41

Number of Wins : 20

Percent Win : 49%

Number of Losses : 21

Interdependence of trade results Z score : -2.21

Confidence limit : 97%

Basically this trading system made \$3,045 on a 22% drawdown and has a negative Z-score. This means it has fewer streaks than one would statistically expect from a set of trades. (In other words, the wins and losses tend to come in runs.) One method of maximizing this approach would be to use crossing equity curves to insure that the system is in the market during the good phases and out when it's bad. (Please reference the section of this book on crossing equity curves for more details on this method.)

The following table illustrates the performance of a trading account using different lengths for the moving averages, for the cross over.

As you can see from the table, this approach had a dramatic effect on the account. Consider the bolded combination above, it made \$9,470 with only a 7% drawdown. This is an incredible improvement over the results from not using money management. (\$3,045 on a 22% drawdown.) Basically, it tripled the profit of the system and reduced the drawdown by two

thirds. This is effective money management! Additionally, for a system that has a good negative Z-Score, almost any two averages will work to improve the results of a system.

For systems that have a negative Z-Score, using crossing equity curves is a natural fit for money management. The crossing equity curves technique is an approach designed especially for catching the winning and losing waves in a system, which is what a negative Z-Score implies. Other techniques may also work as well. For example, a pyramiding method that increases the risk after a win and decreases after a loss would also work suitably.

If you have read this book in a sequential manner, then you have already been through the sections describing the "Amount Traded on a Win or Loss" and "Crossing Equity Curves". Both sections warn traders about the pit falls of applying these two forms of money management when there is a low Z-score and Confidence limit. The examples given in these sections also show how the results can be extremely sensitive to optimization, if the Z-scores are too low. If the examples in the other sections did have reliable Z-scores, it is reasonable to assume they would show results similar to the ones above. The examples in the other sections of this book are meant as a warning to traders who blindly try to exploit a trading system in this manner, without having the proper knowledge about the anomalies and characteristics of the system in question.

Knowing the Z-score about a trading system is one of the best things traders can do. It will allow traders to squeeze additional profit out of a system, without changing any of the parameters of the trading signals to enter the market. It is also one of the most direct ways traders can turn knowledge into money.

Optimal f

Some traders believe the Optimal f is the single best way to analyze a trading system. Others never use this method and do just fine without it.

When comparing the Optimal f value of two systems, all other things being equal, it is wise to pick the account with the larger value. The system with the largest Optimal f value will have the potential to grow the quickest, if the proper Optimal f money management technique/approach is used.

The Optimal f graph is usually displayed as an arch, similar to the one shown below. The optimal value is the peak of the curve. This peak is usually called the Optimal f. (Other places on the graph are usually called, "other values of f".)

In this optimal value lies the tools for growing an account the fastest. But it is necessary to go through a few steps before the data is truly useful to traders. To apply the Optimal f and find the optimal value to risk for an account, follow the steps below:

1. Establish the account size. This is the starting account size and should be obvious to traders.
2. Establish the size of the single largest losing trade. Traders will need to look at the trades to figure this out.
3. Get the Optimal f value from the software.
4. Divide the largest loss by the Optimal f.
5. Divide the account value by the results of step 4.
6. Repeat after each trade.

The results from step 5 will tell traders how many units/ contracts to take on each trading signal for maximum growth to their accounts. The following traces through the aforementioned steps with a real example:

1. The account size is \$25,000.
2. The largest losing trade is \$2,050.
3. The Optimal f is 27%.
4. $\$7,592 = (\$2,050 / 0.27)$.
5. $3.29 = \$25,000 / \$7,592$.
6. Repeat for the next trade.

In a perfect world, traders would enter the next trading signal with 3.29 contracts. Since it is not a perfect world, they need to round the number down to three. Due to the necessity to round down in real-time trading, some traders may find that a value near, but not the optimal, may produce the fastest gain to an account.

Although analyzing different trading systems on the basis of the Optimal f value gives traders insight into which system has the greatest potential for growth, it also has some disadvantages. The Optimal f does not give traders any insight into the risks of using this approach. In many cases, having a high Optimal f, and applying this form of money management to maximize an account, can leave traders susceptible to large draw downs or

greatly increase the probability of ruin for an account.

Probability of Ruin

The Probability of Ruin (POR) is the "statistical possibility" a trading system will deplete an account to the point of ruin, before achieving a dollar level deemed as being successful. Ruin is defined as the level of an account when traders will stop trading. Knowing this value can be very important to traders. The POR illustrates to traders the statistical possibility that their trading systems will naturally, by the laws of probability, drift to a point of success or ruin.

To calculate the Probability of Ruin, traders must slog through a horribly long equation. (However, just let the kNOW Software do the math.) In short, the following represents some basic outcomes/elements of the equation:

All other things being equal:

- 1.The greater the size of the average wins, the lower the POR.
- 2.The larger the average risk per trade, the greater the POR.
- 3.The larger the initial account size, the lower the POR
- 4.The higher the percentage of winning trades, the lower the POR.
- 5.The smaller the account, the greater the POR.

Some authors, have said that the probability of ruin (POR) is not a relevant concept because it does not tell traders anything they can capitalize on. In this sense they are correct. Additionally, it tends to be a small value in winning systems. However, all other things being equal, when given the choice between two trading systems, pick the one with the lowest POR. Also, the probability of ruin should be a value that many small investors/traders look at. Since small investors/traders usually have small accounts, the aggressive forms of money management methods can have PORs that deserve attention.

For the most part, PORs tend to be low. It is usual to see trading systems that have 0-5% for their PORs. For trading systems that work normally and have a reasonable account size, this is what should be expected. The second most common POR is 100%, meaning that failure is almost completely guaranteed. These tend to be trading systems that would fail under most circumstances anyway. Every now and then you get something in the middle

range.

In summary, the POR is a method/value that should be curious to all traders, but it usually offers little additional insight, since most of the time the values are below 5%. However, under some circumstances, it can show traders they have a significant risk of ruining their account. When traders are faced with this reality, it means they are risking far too much on each individual trade. With this knowledge, traders should then limit the risk per trade, in an attempt to bring the POR down to an appropriate level. By trading small portions of their accounts, traders are giving themselves, in essence, more chances to win.

Conclusion- For Now

It is the sincere desire of the authors that through the reading of this book and the using of the kNOW Software users of the kNOW Program will become not only very successful monetarily but also very happy traders and investors.

Trading/investing is not easy, even if all you have to do is throw old chicken bones over your shoulder to make a decision to get in or out of the market. Therefore, we hope the kNOW Program will give you the knowledge and the initial foundation to make sound money management decisions and the desire to learn more about the arcane world of "risk management."

It is the authors intent to continue updating this book and adding new money management techniques/approaches and options as they become known and tested. These new ideas/methods will also be included into the kNOW Software, as they become available. However, in order to expedite this updating effort we will need all the help we can get, so please, forward to us any ideas, questions or new techniques you would like to have us explore and add to the Program.

Thank you again for your time and effort in reading this book and we hope it has been a rewarding experience for you. Creating it has been a real pleasure.